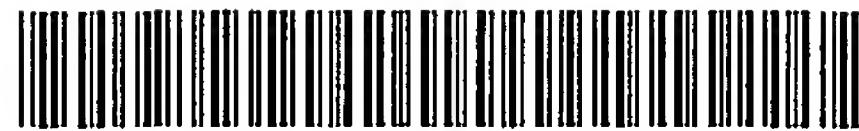




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(71) Applicant: L'OREAL S.A.  
75008 Paris Cedex (FR)

(72) Inventor: Yu, Wei  
Edison, New Jersey 08820 (US)

(74) Representative: Bentham, Stephen  
J.A. KEMP & CO.  
14 South Square  
Gray's Inn  
London WC1R 5JJ (GB)

(54) **Cosmetic compositions comprising at least one dimethicone, at least one linear hydrocarbon wax and at least one compatibilizing agent**

(57) Compositions and methods for making and using compositions comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent. In one embodiment, the emulsions are capable of being molded into sticks.

**Description**

[0001] In an embodiment, the present invention relates to a composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent.

5 [0002] Cosmetic and/or dermatological products may comprise a structured, *i.e.*, gelled and/or rigidified, liquid fatty phase, such as in solid compositions, for example, deodorants, lip balms, lipsticks, concealer products, eyeshadows, and cast foundations. This structuring may be obtained with the aid of waxes and/or fillers. Unfortunately, waxes and fillers may have a tendency to make the composition matte and/or uncomfortable (*e.g.*, tight and/or dry) after application to keratinous material, which may not always be desirable, in particular for a lipstick or an eyeshadow.

10 [0003] Furthermore, it is desirable that care, treatment, and make-up compositions have good staying power or long wearing properties over time. Poor staying power is characterized by a color change (turning, fading) or a nonuniform change in the make-up effect over time, generally following an interaction with sebum and/or sweat secreted by the skin, and, for the lips, an interaction with saliva. Specifically, a composition which does not have good staying power or long-wearing properties over time may oblige the user to reapply the make-up regularly. However, consumers nowadays often wish to enhance the beauty of their face or body while spending as little time as possible in doing so.

15 [0004] Accordingly, consumers may be interested in a product in stick form which has at least one of the following properties: depositing a film with good staying power and/or long wearing properties, glossiness, and wear comfort, for example, non-desiccating and not tightening.

20 [0005] The aforementioned properties are generally associated with the nature of the liquid fatty phase. Thus, attempts have been made to reduce the amount of waxes and/or fillers in the composition to increase the gloss. Often, however, that may lead to an increase in the migration of the liquid fatty phase, *i.e.*, a film with poor staying power and/or poor long wearing properties. Further, the glossiness and/or wear comfort of the product may be reduced. In other words, the amounts of waxes and of fillers required to prepare a stick of suitable hardness which does not exude at room temperature are often a restricting factor on at least one desirable property of the deposit.

25 [0006] Attempts have also been made to formulate products which can be applied in combination, *i.e.*, before, after, and/or simultaneously, with at least one composition, for example, possessing at least one of the aforementioned undesired characteristics. For example, cosmetic compositions have been formulated to act as topcoat compositions, *i.e.*, compositions which are applied on top of another cosmetic composition usually referred to as a "basecoat." The goal of such topcoat compositions has been to improve certain properties of the basecoat. For example, U.S. Patent No. 6,019,962 discloses emulsions and methods for using the emulsions to improve the performance of long wearing cosmetic products and to enable the user to significantly enhance the attributes of long-wearing cosmetic products without compromising their primary advantages, such as gloss and feel. Commonly, however, topcoat products are liquids and may not be as convenient to use and/or may not have at least one desired characteristic, such as non-stickiness and non-migratory properties, which may be provided to a user with a stick composition.

30 [0007] Accordingly, there is a need for a cosmetic composition in stick form which may, for example, deposit a film on at least one keratinous material, the film having at least one property chosen from good staying power, long wearing properties, glossiness, stability, and wear comfort.

35 [0008] The present inventors have surprisingly discovered that a composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent may in some embodiments form a stick which deposits a film having at least one of the aforementioned desirable properties. As used herein, a composition comprising an emulsion includes a composition comprising more than one emulsion.

40 [0009] Thus, in an embodiment, the present invention provides an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent. In one embodiment, the emulsion is capable of being molded in the form of a stick.

45 [0010] In one embodiment, the emulsions of the present invention comprise two incompatible phases, at least one dimethicone and at least one linear hydrocarbon wax, that are stabilized in an emulsion by the at least one compatibilizing agent.

50 [0011] In an embodiment, the present invention provides a method for modifying the structure of a composition comprising at least one dimethicone and at least one linear hydrocarbon wax, comprising the addition of at least one compatibilizing agent in an amount effective to mold the composition into a stick.

55 [0012] In an embodiment, the inventive composition and/or emulsion is non-aqueous. In an embodiment, the inventive composition is capable of being molded in the form of a stick and the stick is stable. In an embodiment, the inventive composition further comprises at least one low viscosity dimethicone different from the at least one dimethicone. In an embodiment, the inventive emulsion is a lip product. In an embodiment, the lip product is a lipstick. In another embodiment, the lip product is a topcoat.

[0013] Certain terms used herein are defined below:

[0014] "At least one" means one or more and thus includes individual components as well as mixtures/combinations.

[0015] "Non-aqueous," as used herein, refers to compositions comprising less than 5% water by weight relative to

the total weight of the composition, such as less than 2% water by weight, and further such as less than 1% water by weight. The amount of water in the composition for purposes of this invention refers to the amount of water added to the components of the composition.

[0016] "Emulsion," as used herein, refers to a system of two or more incompatible materials, in which one material is suspended or dispersed throughout another material in separate droplets and is stable.

[0017] "Incompatible" compounds, as used herein, refers to compounds which, when combined in the absence of the at least one compatibilizing agent, result in an emulsion which is not homogeneous as viewed by the naked eye. For example, compounds are incompatible when, after an emulsion comprising the compounds is heated with mixing to a temperature which is equal to the melting point of highest melting compound in the emulsion and the temperature of the emulsion is then maintained for 5 minutes without mixing, the emulsion is cloudy to the naked eye and/or comprises at least two separate phases as viewed by the naked eye.

[0018] "Gloss," as used herein, refers to surface shininess. The gloss of a composition is measured and evaluated using a gloss meter. Gloss meters are commonly used in the nail polish art, and measure the amount of light reflected from the surface or film of interest. The gloss may be quantified, for example, as a % reflectance.

[0019] "Staying power," as used herein, includes long wear properties and refers to the ability of a film of a composition deposited on a keratinous material to retain at least one of: color (including shade and intensity), gloss, and thickness. These properties are evaluated and compared visually, such as by applying a film of a composition to at least one human keratinous material and inspecting these properties after a predetermined amount of time as described in the example.

[0020] "Wear comfort," as used herein, refers to at least one property exhibited by a film of a composition deposited on at least one keratinous material chosen from non-desiccating, not tightening non-drying, moisturizing, non-greasy and non-stickiness. These properties are evaluated and compared visually, such as by applying a film of a composition to at least one human keratinous material and inspecting these properties after a predetermined amount of time as described in the example.

[0021] "Hydrocarbon group," as used herein, includes substituted linear alkyl groups, unsubstituted linear alkyl groups, substituted branched alkyl groups, unsubstituted branched alkyl groups, substituted cyclic alkyl groups, unsubstituted cyclic alkyl groups, substituted linear alkenyl groups, unsubstituted linear alkenyl groups, substituted branched alkenyl groups, unsubstituted branched alkenyl groups, substituted cyclic alkenyl groups, unsubstituted cyclic alkenyl groups, substituted aromatic groups, and unsubstituted aromatic groups, wherein the aforementioned unsubstituted groups comprise only carbon and hydrogen atoms.

[0022] "Substituted," as used herein, means further comprising at least one substituent. Non-limiting examples of substituents include atoms, such as oxygen, nitrogen, and halogens, as well as functional groups, such as hydroxyl, ether groups, oxyalkylene groups, polyoxyalkylene groups, carboxylic acid groups, amine groups, and amide groups.

[0023] "Migration," as used herein, means a running of the composition beyond the initial application line as viewed by the naked eye.

[0024] "Keratinous fibers," as used herein, includes hair (including eyelashes and eyebrows).

[0025] "Keratinous material," as used herein, includes skin (including lips), hair (including eyelashes and eyebrows), and nails.

[0026] "Polymer," as used herein, comprises copolymers and homopolymers, including but not limited to, for example, block polymers, cross linked polymers, and graft polymers.

[0027] "Copolymer," as used herein, refers to polymers formed from at least two different types of monomers.

[0028] "Silicone polymers," as used herein, includes, for example, siloxanes, organosilanes and organosiloxanes; and refers to a polymer comprising at least one monomeric unit comprising at least one silicon atom and at least one oxygen atom, wherein the polymer may be chosen from linear polymers, branched polymers, and cyclic polymers; further wherein the polymer may optionally be substituted with at least one group different than said at least one hydrocarbon group; further wherein the polymer may optionally further comprise at least one heteroatom different from silicone atoms and oxygen atoms intercalated in the polymer chain.

[0029] A composition that is "capable of being molded," as used herein, refers to compositions which are pourable or shapeable when heated but which set or harden as cooled. For example, a composition capable of being molded may be pourable or shapeable when it is heated but, once cooled to room temperature, the composition retains its shape. Whether a composition is "capable of being molded," as defined herein, is tested by determining whether a composition, upon heating to 37°C or greater (such as, for example to a temperature ranging from 50°C to 75°C) is pourable or shapeable and whether, upon subsequent cooling, it retains its shape.

[0030] The term "stable" refers to a composition which, under prescribed conditions, does not exhibit at least one abnormality in the composition such as, for example, bending or leaning if the composition is in stick form, phase separation, melting, or syneresis.

[0031] Stability is tested by placing the composition in a controlled environment chamber for a specific amount of time at a specific temperature. Compositions in the form of a stick are tested standing up in the chamber. "Standing

"up," as used herein; means upright, in a vertical position. For example, if the composition is in the form of a stick, the stick is placed upright in the chamber, i.e., in a vertical position with respect to the surface of the chamber on which the stick is placed.

[0032] According to the present invention, a composition is stable if it does not exhibit at least one abnormality in the emulsion after 2 months at room temperature (25°C.) as viewed by the naked eye. However, more stringent requirements for stability may be used depending on the intended use of the composition. For example, in an embodiment, a composition is stable if it does not exhibit at least one abnormality in the emulsion after 6 months at room temperature (25°C) as viewed by the naked eye. In another embodiment, a composition is stable if it does not exhibit at least one abnormality in the composition after 9 months at room temperature (25°C) as viewed by the naked eye. In another embodiment, a composition is stable if it does not exhibit at least one abnormality in the composition after 4 weeks at 37°C as viewed by the naked eye. In another embodiment, a composition is stable if it does not exhibit at least one abnormality in the composition after 4 weeks at 50°C as viewed by the naked eye.

[0033] In these stability tests, the physical condition of the sample is inspected as it is placed in the chamber. The sample is then inspected after a specific length of time after the sample is placed in the chamber, such as 8 hours, 12 hours, 24 hours, 1 week, 2 weeks, 3 weeks, 4 weeks, 5 weeks, 6 weeks, 7 weeks, 8 weeks (2 months), 12 weeks (3 months), 16 weeks (4 months), 20 weeks (5 months), 24 weeks (6 months), 28 weeks (7 months), 32 weeks (8 months), 36 weeks (9 months), and/or 56 weeks (1 year). The temperature of the chamber is set at a specific temperature, such as 25°C, 37°C, or 50°C, as described above, or, as further examples, at 4°C for 1 year, or at 45°C for 4 weeks. For example, as discussed above, according to the present invention, a composition is stable if it does not exhibit at least one abnormality in the emulsion after 2 months at room temperature (25°C.) as viewed by the naked eye. Thus, the physical condition of the composition is inspected as it is placed in a chamber set at 25°C, inspected after specific lengths of time, if desired, and ultimately, inspected after 2 months.

[0034] In another embodiment, a sample may be tested for at least one abnormality under freeze-thaw conditions, where the sample is frozen for 12 hours and then allowed to thaw for 12 hours. Generally, freeze-thaw conditions comprise 3 cycles of each of the aforementioned 12 hour periods.

[0035] At each inspection, the sample is examined for at least one abnormality in the emulsion such as, for example, bending or leaning if the emulsion is in stick form, phase separation, melting, or syneresis. As used herein, "syneresis" is the appearance of droplets on a surface of an emulsion that are visible to the naked eye.

[0036] The skilled artisan will readily recognize at least one abnormality that impedes functioning of a composition based on the intended application, such as, for example, the appearance of at least one abnormality as described above. The skilled artisan will also readily recognize that the observation of at least one abnormality that impedes functioning of a composition will depend not only on its intended application, but its composition as well.

[0037] It is to be understood that both the foregoing general description and the following detailed description are exemplary and explanatory only and are not restrictive of the invention as claimed. Reference will now be made in detail to exemplary embodiments of the present invention.

[0038] As previously discussed, the present invention, in an embodiment, provides a composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent. In an embodiment, the inventive emulsion is chosen from aqueous emulsions and non-aqueous emulsions. In an embodiment, the inventive composition is a cosmetic composition. In an embodiment, the inventive composition further comprises at least one low viscosity dimethicone different from the at least one dimethicone.

[0039] The moldable compositions of the present invention may, for example, make it possible to form a product having a desired shape, such as for example a stick form or the form of a container, such as a compact form. Further, for example, the moldable compositions may make it possible to control the exudation of components that form the compositions, and thus may aid in the storage of such compositions and in the application of cosmetic, dermatological and therapeutic compositions on at least one keratinous material.

[0040] Accordingly, the present invention applies not only to make-up products for at least one keratinous material such as lip compositions, lip pencils, foundations including foundations which may be cast in the form of a stick, a dish, a pan or a jar, concealer products, temporary tattoo products, eyeliners, mascara bars, but also to body hygiene products such as deodorant sticks, and to care products and products for treating at least one keratinous material, such as sunscreen and anti-sun products which may be in stick form. Thus, the present invention may be in the form of mascara product including mascara bars, an eyeliner product, a foundation product, a lipstick product, a blush for cheeks or eyelids, a deodorant product, a make-up product for the body and/or hair, a make-up-removing product, an eyeshadow product, a face powder product, a concealer product, a treating shampoo product, a hair conditioning product, a sunscreen, colorant for the skin or hair, or skin care formula such as, for example, anti-pimple or shaving cut formulas.

[0041] In one embodiment, the at least one compatibilizing agent of the present invention may make it possible to obtain an emulsion of at least one dimethicone and at least one linear hydrocarbon wax such as to enable formation of a stable stick product. Also, in addition to making it possible to obtain a product in the form of a stick or tube, the

inventive emulsion may limit the exudation of a fatty phase from the solid emulsions, especially in hot and humid regions; may limit, after deposition on keratinous material, such as skin or lips, the migration of this phase into wrinkles and fine lines; and/or may deposit a film on keratinous material which has at least one property chosen from good staying power, long wearing properties, glossiness, and wear comfort.

5 [0042] These characteristics are particularly sought after in cosmetic compositions, such as lip products, such as lipsticks, concealer products, and eyeshadows. Specifically, significant migration of the liquid fatty phase, in particular when it is charged with coloring agents, may lead to an unpleasant appearance around the lips and the eyes, *i.e.*, making the wrinkles and fine lines appear more prominent. This migration is often mentioned by consumers as being a major defect of conventional lip products, concealer products and eye make-ups.

10 [0043] Accordingly, in an embodiment, the present invention is drawn to a care and/or make-up and/or treatment compositions for the skin and/or the lips of the face and/or for superficial body growths such as keratinous fibers which may make it possible to overcome at least one of the drawbacks mentioned above.

15 [0044] The inventive compositions may be modified according to the nature of the at least one compatibilizing agent, the viscosity of the at least one dimethicone, and the nature of the at least one linear hydrocarbon wax, and may be such that a rigid structure in the form of a tube or stick with mechanical strength is obtained. When these tubes or sticks are colored, they may make it possible, after application, to obtain a uniformly, *i.e.*, homogeneously, colored glossy deposit, such as a layer, which does not migrate, for example, into the wrinkles and fine lines of the skin surrounding, for example, the lips and eyes, and which has good staying power and/or long-wearing properties, in particular of the color, over time. Thus, the compositions of the invention may, for example, be a composition for the skin or the lips, such as a foundation composition, concealer product, eyeshadow or lipstick composition, *e.g.*, in stick form.

20 [0045] In another embodiment, the present invention provides a non-aqueous composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent. In another embodiment, the present invention is drawn to a method for making a stable emulsion comprising combining at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent, wherein the at least one compatibilizing agent is present in an amount effective to provide an emulsion which is capable of being molded in the form of a stable stick.

25 [0046] In another embodiment, the present invention provides a method for caring for, making up and/or treating at least one keratinous material comprising applying to the at least one keratinous material a composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent. In another embodiment, the composition further comprises at least one low viscosity dimethicone different from the at least one dimethicone.

30 [0047] The emulsion of the invention can be a single or multiple emulsion, such as an oil-in-water or water-in-oil emulsion or an oil-in-water-in-oil emulsion, or a water-in-oil-in-water emulsion, or a rigid or soft gel containing an oily continuous phase. In an embodiment, the inventive emulsion is in a form cast as a stick or in a dish, for example, in the form of an oily rigid gel, such as an anhydrous gel, *e.g.*, an anhydrous stick. In a further embodiment, the emulsion is in the form of an opaque or translucent rigid gel (depending on the presence or absence of pigments). In another embodiment, the emulsion of the invention is self-supporting. In another embodiment, the emulsion of the invention is a non-aqueous emulsion.

35 [0048] In an embodiment, the present invention is drawn to a method of providing at least one property chosen from staying power, long wear properties, glossiness, and wear comfort comprising applying to at least one keratinous material a composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent.

40 [0049] In an embodiment, the inventive composition is a topcoat product. For example, the present invention may be a method of increasing at least one property of a basecoat composition chosen from properties of staying power, long wear properties, glossiness, and wear comfort comprising applying to at least one keratinous material at least one basecoat composition; and applying to the basecoated keratinous material a composition of the invention.

45 [0050] Non-limiting examples of dimethicone according to the present invention include Dow Corning 200 (350 cst) or dimethicones of viscosity equal to or higher than 100 cst, such as, for example, 100, 350, and 500 cst. All viscosities used herein are measured using the same parameters which obtain 350 cst for Dow Corning 200.

50 [0051] In an embodiment, dimethicone is present in the composition in an amount ranging from 5% to 95% by weight relative to the total weight of the composition. In another embodiment, dimethicone is present in an amount ranging from 10% to 90% by weight relative to the total weight of the composition. In another embodiment, dimethicone is present in an amount ranging from 20% to 80% by weight relative to the total weight of the composition.

55 [0052] The at least one linear hydrocarbon wax according to the present invention is solid at room temperature, and may have a melting point greater than about 35°C, such as, for example greater than about 55°C. In an embodiment, the at least one linear hydrocarbon wax is incompatible with high viscosity dimethicone, such as, for example, 100, 350, and 500 cst. Non-limiting examples of at least one linear hydrocarbon wax include polyethylene waxes and -linear paraffin waxes. According to the present invention, the linear hydrocarbon of the at least one linear hydrocarbon wax

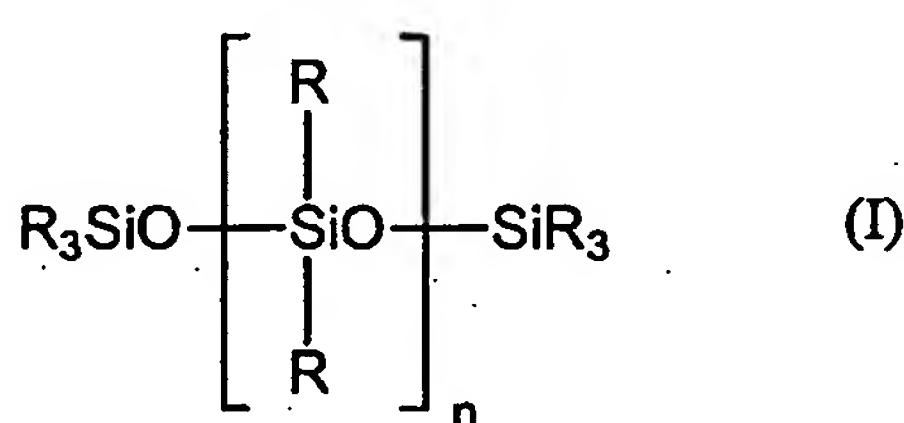
may be chosen from substituted linear alkanes, unsubstituted linear alkanes, substituted linear alkenes, and unsubstituted linear alkenes, wherein the aforementioned unsubstituted groups comprise only carbon and hydrogen atoms.

[0053] Non-limiting examples of the at least one linear hydrocarbon wax include polyethylene waxes such as Polyethylene 400 and Polyethylene 500, which are commercially available from New Phase Technologies, linear paraffin waxes such as paraffin S&P 206, S&P 173, and S&P 434, which are available from Strahl & Pitsch, and long-chain linear alcohols such as products comprising blends of long-chain linear alcohols and polyethylene such as Performacol 425 (C<sub>20</sub>-C<sub>40</sub> alcohols and polyethylene) and Performacol 550 (C<sub>30</sub>-C<sub>50</sub> alcohols and polyethylene), which are commercially available from New Phase Technologies.

[0054] In an embodiment, the at least one linear hydrocarbon wax is present in the composition in an amount ranging from 2% to 30% by weight relative to the total weight of the emulsion. In another embodiment, the at least one linear hydrocarbon wax is present in an amount ranging from 5% to 20% by weight relative to the total weight of the composition.

[0055] The at least one compatibilizing agent according to the present invention is chosen from silicone polymers comprising at least one hydrocarbon group. In an embodiment, at least one of the at least one hydrocarbon groups comprises at least 18 carbon atoms.

[0056] In an embodiment, the at least one compatibilizing agent is chosen from compatibilizing agents of formula (I). Compatibilizing agents of formula (I) have the following structure:



30 wherein

R, which may be identical or different, are each chosen from hydrocarbon groups; and

the total molecular weight of Si and O atoms is at least 10% of the total weight of the at least one compatibilizing agent of formula (I), and

the melting point of the at least one compatibilizing agent of formula (I) ranges from 35°C to 110°C

35 with the proviso that at least one R comprises at least 18 carbon atoms.

[0057] In an embodiment, at least one R is chosen from C<sub>30</sub> to C<sub>45</sub> hydrocarbon groups. In another embodiment, at least one R is chosen from C<sub>30</sub> to C<sub>45</sub> alkyl groups. For example, the at least one compatibilizing agent may be chosen from at least one C<sub>30</sub>-C<sub>45</sub> alkyl dimethicone. In another embodiment, the at least one compatibilizing agent is solid at room temperature.

[0058] Non-limiting examples of suitable silicone polymers comprising at least one hydrocarbon group include linear polysiloxanes, branched polysiloxanes, cyclic linear polysiloxanes. Non-limiting examples of the at least one compatibilizing agent include linear polysiloxanes comprising at least one C<sub>30</sub>-C<sub>45</sub> alkyl group, such as SF1642 sold by GE Silicones; C<sub>30</sub>-C<sub>45</sub> alkyl methicones, such as AMS-C30 wax sold by Dow Corning; C<sub>20</sub>-C<sub>24</sub> alkyl methicones, such as SilCare 41M40 sold by Clariant; C<sub>24</sub>-C<sub>28</sub> alkyl methicones, such as Abil Wax 9810 sold by Goldschmidt and SilCare 41 M50 sold by Clariant; hexyl methicones, such as SilCare 41M10 sold by Clariant; caprylyl methicones, such as SilCare 41M15 sold by Clariant; lauryl methicones, such as SilCare 41M20 sold by Clariant; stearyl methicones, such as SilCare 41M30 sold by Clariant; cetyl dimethicone sold by Goldschmidt; stearyl dimethicones, such as SilCare 41M65 sold by Clariant; C<sub>20</sub>-C<sub>24</sub> alkyl dimethicones, such as SilCare 41M70 sold by Clariant; C<sub>24</sub>-C<sub>28</sub> alkyl dimethicones, such as SilCare 41M80 sold by Clariant; and such as the silicone polymers disclosed in EP 0 545 002, the disclosure of which is hereby incorporated by reference.

[0059] In an embodiment, the at least one compatibilizing agent is present in the composition in an amount ranging from 5% to 90% by weight relative to the total weight of the composition. In another embodiment, the at least one compatibilizing agent is present in an amount ranging from 5% to 80% by weight relative to the total weight of the composition. In another embodiment, the at least one compatibilizing agent is present in an amount ranging from 5% to 60% by weight relative to the total weight of the composition.

[0060] Further, according to the present invention, the inventive composition, in certain embodiments, further comprises at least one low viscosity dimethicone different from the at least one dimethicone. Thus, in one embodiment, the at least one low viscosity dimethicone has lower viscosity than the at least one dimethicone of the inventive com-

position. Non-limiting examples of at least one low viscosity dimethicone include dimethicones having a viscosity lower than 100 cst. For example, the inventive emulsion may further comprise Dow Coming 1503 fluid which is a blend of an ultra high viscosity dimethiconol in a low viscosity dimethicone.

[0061] In an embodiment, the at least one low viscosity dimethicone is present in the composition in an amount ranging from 5% to 80% by weight relative to the total weight of the composition. In another embodiment, the at least one low viscosity dimethicone is present in an amount ranging from 10% to 60% by weight relative to the total weight of the composition.

[0062] Further, the inventive composition, in certain embodiments, further comprises at least one fluorosilicone. Non-limiting examples of at least one fluorosilicone include FL-05, FL-10, X-22-821, X-22-822, and FL100 (including FL100 (100 cst), FL100 (450 cst), FL100 (1000 cst), and FL100 (10,000 cst)), all of which are commercially available from Shin-Etsu.

[0063] In an embodiment, the at least one fluorosilicone is present in the composition in an amount ranging from 0.1% to 30% by weight relative to the total weight of the composition. In another embodiment, the at least one fluorosilicone is present in an amount ranging from 0.5% to 10% by weight relative to the total weight of the composition.

[0064] Further, the inventive composition may further comprise at least one wax different from the at least one linear hydrocarbon wax. Non-limiting examples of such waxes include waxes of natural origin, such as beeswax, modified beeswax, carnauba wax, candelilla wax, jojoba wax, ouricury wax, Japan wax, cork fiber wax, sugar cane wax, non-linear paraffin waxes, lignite wax, microcrystalline waxes, lanolin wax, montan wax and ozokerites, hydrogenated oils such as hydrogenated jojoba oil, jojoba esters, waxes obtained by Fischer-Tropsch synthesis, fatty acid esters, fatty acid glycerides, and silicone waxes different from the at least one compatibilizing agent.

[0065] In an embodiment, the at least one wax different from the at least one linear hydrocarbon wax is present in the composition in an amount ranging from 0.01% to 20% by weight relative to the total weight of the composition. In another embodiment, the at least one wax different from the at least one linear hydrocarbon wax is present in an amount ranging from 0.1% to 15% by weight relative to the total weight of the composition.

[0066] Further, the composition of the present invention may further comprise at least one coloring agent. The at least one coloring agent may be chosen from pigments, dyes, such as liposoluble dyes, nacreous pigments, and pearl-ing agents. The at least one coloring agent may be chosen, for example, in order to obtain emulsions which give good coverage, that is, which do not allow a significant amount of the at least one keratin material to which it is applied to show through. The at least one coloring agent may also reduce any sticky feel of the emulsions.

[0067] Representative liposoluble dyes which may be used according to the present invention include Sudan Red, DC Red 17, DC Green 6, β-carotene, soybean oil, Sudan Brown, DC Yellow 11, DC Violet 2, DC Orange 5, annatto, and quinoline yellow. The liposoluble dyes, when present, generally have a concentration ranging up to 20% by weight of the total weight of the composition, such as from 0.0001% to 6%.

[0068] The nacreous pigments which may be used according to the present invention may be chosen from white nacreous pigments such as mica coated with titanium or with bismuth oxychloride, colored nacreous pigments such as titanium mica with iron oxides, titanium mica with ferric blue or chromium oxide, titanium mica with an organic pigment chosen from those mentioned above, and nacreous pigments based on bismuth oxychloride. The nacreous pigments, if present, may be present in the composition in a concentration ranging up to 50% by weight of the total weight of the composition, such as from 0.1% to 20%.

[0069] The pigments which may be used according to the present invention may be chosen from white, colored, inorganic, organic, polymeric, nonpolymeric, coated and uncoated pigments. Representative examples of mineral pigments include titanium dioxide, optionally surface-treated, zirconium oxide, zinc oxide, cerium oxide, iron oxides, chromium oxides, manganese violet, ultramarine blue, chromium hydrate, and ferric blue. Representative examples of organic pigments include carbon black, pigments of D & C type, and lakes based on cochineal carmine, barium, strontium, calcium, and aluminum. If present, the pigments may be present in the composition in a concentration ranging up to 40% by weight of the total weight of the composition, such as from 1% to 35%, -and further such as from 2% to 25%. In the case of certain products, the pigments, including nacreous pigments, may, for example, represent up to 50% by weight of the composition.

[0070] In an embodiment of the present invention, the inventive composition comprises at least one pigment. In another embodiment, the at least one pigment is chosen from encapsulated pigments. As used herein, "encapsulated pigments" refer to pigments which are encapsulated within at least one polymer. The capsule may release some of its contents, i.e., the enclosed pigment and dispersing solvent, if present, when pressure is applied to the emulsion comprising such encapsulated pigments. For example, when encapsulated pigments are comprised in a lip product emulsion, the capsule may release some of its contents when the lips are pressed together.

[0071] Accordingly, in an embodiment, the inventive compositions comprise at least one encapsulated pigment, wherein the encapsulated pigments are dispersed in at least one solvent. Thus, when pressure is applied to the emulsion, the capsule may release some of its contents and may thereby allow maintenance of at least one of color (from the pigments) and gloss (from the at least one solvent) on the lips. In an embodiment, the at least one solvent is chosen

from emollients, such as, for example, silicone emollients, octyl dodecanol, and polyglyceryl-2 triisostearate. In another embodiment, the at least one solvent is chosen from non-volatile silicones. In another embodiment, the at least one solvent is phenyltrimethicone. Thus, the present invention also -provides, in an embodiment, compositions further comprising at least one encapsulated pigment wherein said at least one encapsulated pigment is dispersed in at least one silicone.

[0072] In an embodiment, the invention provides for a composition comprising at least one encapsulated pigment, wherein the at least one encapsulated pigment is dispersed in phenyltrimethicone. In another embodiment, the present invention provides a method for maintaining at least one property chosen from color and gloss of a composition on at least one keratinous material, comprising applying a composition comprising at least one encapsulated pigment, wherein the at least one encapsulated pigment is dispersed in at least one silicone.

[0073] The maintenance of gloss of a composition over time may be measured by visual inspection after a specific amount of time. For example, gloss is maintained if the gloss of the composition on the keratinous material 30 minutes after application of the composition to the keratinous material is the, equal to or greater than the gloss of the same composition upon application as viewed by the naked eye.

[0074] The maintenance of color of a composition over time may be measured by visual inspection after a specific amount of time. For example, color is maintained if the color of the composition on the keratinous material 30 minutes after application of the composition to the keratinous material is as intense or more intense than the color of the same composition upon application as viewed by the naked eye. Further, L values of the composition can be measured (for example, using Minolta Chroma Meter CR-300) to determine the intensity of the color. In the cosmetic arts, and as defined in the L, a, b colorimetric notations system of the Commission Internationale de l'Eclairage, L defines the intensity of the shade. See U.S. Patent No. 6,010,541, Col 1, line 66 to Col. 2, line 8, and Col. 9, lines 15 - 57. The shade is proportionally more intense the lower the value of L (0 = black, 100 = white).

[0075] Accordingly to the present invention, the inventive compositions may further comprise at least one filler. As used herein, the term "filler" means any particle that is solid at room temperature and atmospheric pressure, used alone or in combination, which does not react chemically with the various ingredients of the emulsion and which is insoluble in these ingredients, even when these ingredients are heated to a temperature above room temperature and, in particular, to their softening point or their melting point. In an embodiment, the at least one filler has a melting point at least greater than 170°C, for example, greater than 200°C. In an embodiment, the at least one filler may have an apparent diameter ranging from 0.01 µm to 150 µm, such as from 0.5 µm to 120 µm, for example from 1 µm to 80 µm. An apparent diameter corresponds to the diameter of the circle into which the elementary particle fits along its shortest dimension (thickness for leaflets). Further, the at least one filler may be absorbent, *i.e.*, capable in particular of absorbing the oils of the composition and also the biological substances secreted by the skin, may be surface-treated, *e.g.*, to make it lipophilic, and/or may be porous so as to absorb -the sweat and/or sebum secreted by the skin.

[0076] The at least one filler may be chosen from inorganic and organic fillers, and may have any shape such as lamellar, spherical and/or oblong. Non-limiting examples of the at least one inert filler include talc, mica, silica, kaolin, polyamide powders (such as Nylon® powder, and such as the product sold by Atochem as Orgasol®), poly-β-alanine powders, polyethylene powders, acrylic polymer powders (such as polymethyl methacrylate (PMMA) powder, for instance the product sold by Wacker as Covabead LH-85 (particle size 10-12 µm) and the acrylic acid copolymer powder sold by Dow Corning as Polytrap®), polytetrafluoroethylene (Teflon®) powders, lauroyllysine, boron nitride, silica, kaolin, starch, starch derivatives, hollow polymer microspheres (such as those hollow polymer microspheres formed from polyvinylidene chloride and acrylonitrile, for instance the product sold by Nobel Industrie as Expancek®), and polymerized silicone microspheres (such as those polymerized silicone microspheres sold by Toshiba as Tospearl®), precipitated calcium carbonate, magnesium carbonate and hydrocarbonate, hydroxyapatite, hollow silica microspheres (such as the product sold by Maprecos as Silica Beads®), glass microcapsules, ceramic microcapsules, and polyester particles.

[0077] Depending on the intended application, such as a stick, hardness of the composition may also be considered. In an embodiment, the at least one compatibilizing agent is present in an amount effective to further provide hardness to the composition. The hardness of a composition may, for example, -be expressed in grams (g). The composition of the present invention may, for example, have a hardness ranging from 10 g to 5000 g, such as from 15 g to 500 g, further such as from 20 g to 600 g, and further such as from 30 g to 150 g.

[0078] This hardness is measured as follows. A test for hardness is according to a method of penetrating a probe into the composition and in particular using a texture analyzer (for example TA-XT2i from Stable Microsystems) equipped with a stainless steel cylinder of height 35 mm and diameter 4 mm. The hardness measurement is carried out at 20°C at the center of 5 samples of the composition. The cylinder penetrates at a speed of 2 mm/s, the total displacement being 5 mm. The recorded hardness value is that of the maximum peak observed. The measurement error is ± 10g.

[0079] The hardness of the composition of the present invention may be such that the compositions are self-supporting and can easily disintegrate to form a satisfactory deposit on a keratinous material. In addition, this hardness

may impart good impact strength to the inventive composition which may be molded or cast, for example, in stick or dish form.

[0080] The skilled artisan may choose to evaluate a composition using the tests for hardness outlined above based on the application envisaged and the hardness desired.

[0081] According to the present invention, the composition in stick form may also possess the properties of deformable, flexible elastic solids and may also have noteworthy elastic softness upon application to a keratinous material. Further, in an embodiment, the inventive composition has a melting point ranging from 40°C to 150°C.

[0082] The composition of the present invention may also further comprise at least one suitable additive commonly used in the field concerned. In an embodiment, the at least one additive may be chosen from fatty materials, coloring agents, humectants, texture modifiers, antifoaming agents, moisturizers, viscosity modifiers, antioxidants, essential oils, preserving agents, fragrances, neutralizing agents, liposoluble polymers, polysaccharides, fluorinated compounds, and cosmetically active agents and dermatological active agents such as, for example, emollients, vitamins, plant extracts, essential fatty acids, and UV-screening agents. In an embodiment, the composition of the present invention is transparent and/or clear, including, for example, a composition without pigments. In yet another embodiment, the composition of the present invention is neither transparent nor clear.

[0083] Needless to say, the person skilled in the art will take care to select the optional additional additives and the amount thereof such that at least one advantageous property of the composition according to the invention, such as stability or non-migration, is not, or is not substantially, adversely affected by the addition(s) envisaged.

[0084] Other than in the operating examples, or where otherwise indicated, all numbers expressing quantities of ingredients, reaction conditions, and so forth used in the specification and claims are to be understood as being modified in all instances by the term "about." Accordingly, unless indicated to the contrary, the numerical parameters set forth in the following specification and in the attached claims are approximations that may vary depending upon the desired properties sought to be obtained by the present invention. At the very least, and not as an attempt to limit the application of the doctrine of equivalents to the scope of the claims, each numerical parameter should be construed in light of the number of significant digits and ordinary rounding approaches.

[0085] Notwithstanding that the numerical ranges and parameters setting forth the broad scope of the invention are approximations, the numerical values set forth in the specific examples are reported as precisely as possible. Any numerical value, however, inherently contains certain errors necessarily resulting from the standard deviation found in their respective testing measurements. The following examples are intended to illustrate the invention without limiting the scope as a result. The percentages are given on a weight basis.

### Examples

#### Example

[0086] The following compositions were prepared.

[0094] Table 1.

Components	Inventive Composition 1 (% wt)	Inventive Composition 2 (% wt)	Inventive Composition 3 (% wt)
<b>Phase A</b>			
Dimethicone <sup>1</sup>	30.0	30.0	30.0
Dimethiconol and dimethicone <sup>2</sup>	58.0	56.0	56.0
Trifluoropropyl dimethicone <sup>3</sup>	--	1.0	1.0
<b>Phase B</b>			
C <sub>30</sub> -C <sub>45</sub> alkyl dimethicone <sup>4</sup>	7.0	7.0	5.0

<sup>1</sup> Dow Corning 200 (350 cst)

<sup>2</sup> Dow Corning 1503 Fluid

<sup>3</sup> FL-5

<sup>4</sup> SF1642

[0094] Table 1. (continued)

Components	Inventive Composition 1 (% wt)	Inventive Composition 2 (% wt)	Inventive Composition 3 (% wt)
<b>Phase B</b>			
Polyethylene wax <sup>5</sup>	5.0	6.0	8.0

<sup>5</sup> Polyethylene 500**Preparation**

[0087] The components of phase A were mixed until uniform and then heated in an oil bath. When the temperature of the oil bath reached 110°C, C<sub>30</sub>-C<sub>45</sub> alkyl dimethicone was added to the phase A mixture and the resulting mixture was stirred until uniform. The polyethylene wax was then slowly added to the resulting mixture while maintaining the temperature of the oil bath at 110°C until the wax was completely melted and dispersed. The temperature of the mixture was lowered to 90°C-95°C at which time the bulk was poured into a mold.

[0088] Inventive Composition 1 was harder than Inventive Composition 2 and Inventive Composition 3 was harder than Inventive Composition 2.

**Results****As Lip Product**

[0089] Lip compositions were applied to the bare lips of eight sensory panelists trained in the application and evaluation of lip products and each was evaluated for various properties at 4 and 6 hours. The panelists followed the following protocol:

[0090] Panelists used standard soap to wash their lips before product application and allowed their lips to equilibrate for 10 minutes. If there was a base coat, panelists applied base coat to lips as follows: starting at the upper lip, center: two strokes to the left, then two strokes to the right; starting at the left corner of lower lip: two strokes from left to right then right to left. Panelists answered a questionnaire immediately after application. At 1 minute, the panelists checked for tack and grease. At 2 minutes, the panelists tested for product transfer by kissing a white piece of paper. At 3 minutes, the panelists checked for tack and grease. At 5 minutes, the panelists tested for product transfer by kissing a white piece of paper. The panelists would then apply the topcoat as follows: starting at the upper lip, center: two strokes to the left, then two strokes to the right; starting at the left corner of lower lip: two strokes from left to right then right to left. Panelists answered a questionnaire at 4 hours and at 6 hours. Tukey's Studentized Range test statistics were used for analysis.

[0091] The results are presented in Table 2.

Table 2.

Results	Inventive Composition 1	Inventive Composition 2	Inventive Composition 3	Lipfinity TopCoat*
Ease of application	7.7	7.7	7.9	7.5
Richness of feel	7.5	6.6	7.5	6.8
Slip on lips	7.7	7.6	8.0	7.4

\*Commercially available from Max Factor

[0092] The results show that each of the inventive compositions, Inventive Composition 1, Inventive Composition 2, and Inventive Composition 3, were easier to apply, and felt richer and silkier on lips than Lipfinity TopCoat.

[0093] As Topcoat over Basecoat in Stick Form

[0094] The following basecoat composition in stick form, Stick Basecoat, was prepared.

Table 3.

Components	Stick Basecoat
Isododecane	q.s.

Table 3. (continued)

Components	Stick Basecoat
Film Formers	20
Wax	11
Emollients	5.3
Plasticizer	2.3
Pigments and fillers	7.9

Results

[0095] The basecoat composition above, Stick Basecoat, was applied to the bare lips of eight sensory panelists trained in the application and evaluation of lip products and each was evaluated for various properties, as described above. A film of one of the inventive compositions, Inventive Composition 1 or Inventive Composition 2, was then applied to the basecoated lips as a topcoat. Various properties of the double coated lips were evaluated. Both of the inventive compositions, Inventive Composition 1 and Inventive Composition 2, increased the stickiness on lips, provided a richer, creamier, thicker feel gloss on the lips, and reduced the tight, dry feeling on lips as compared to the lips having only a basecoat composition. The wear comfort of the basecoat was increased by applying either Inventive Composition 1 or Inventive Composition 2 of the present invention over the basecoat. The gloss/shine and moisture also increased with application of the invention composition.

As Topcoat over Liquid Basecoat

[0096] The following liquid basecoat composition, Liquid Basecoat, was prepared.

Table 4.

Components	Liquid Basecoat
Isododecane	q.s.
Emollients	4.3
Plasticizer	20
Film Formers	13.6
Pigments & Fillers	2.75

Results

[0097] The basecoat composition above, Liquid Basecoat, was applied to the bare lips of eight sensory panelists trained in the application and evaluation of lip products and each was evaluated for various properties. A film of Inventive Composition 3 was then applied to the basecoated lips as a topcoat. Various properties of the double coated lips were evaluated. Inventive Composition 3, 1 or 2 was found to increase the stickiness on lips, provide a richer, creamier, thicker feel on the lips, and reduce the tight, dry feeling on lips as compared to the lips having only a basecoat composition. The wear comfort of the basecoat was increased by applying Inventive Composition 3, 1 or 2 of the present invention over the basecoat. The gloss/shine increased and the dry effect decreased upon application of the inventive composition, resulting in improved qualities.

[0098] Thus, the above results show that the inventive compositions, Inventive Composition 1, Inventive Composition 2, and Inventive Composition 3, provide at least one desirable property to lips coated with a basecoat composition, wherein the basecoat composition is in the form of a stick or a liquid.

Comparative Examples

[0099] The following comparative compositions were prepared.

Table 5.

Components	Comparative Composition 4 (% wt)	Comparative Composition 5 (% wt)	Comparative Composition 6 (% wt)
<b>Phase A</b>			
Dimethicone (20 cst)	44.0	44.0	30.0
Dimethicone (500 cst)	--	--	29.0
Phenyltrimethicone (1000 cst)	44.0	44.0	--
Cetyl dimethicone (1000 cst)	--		28.0
<b>Phase B</b>			
C <sub>30</sub> -C <sub>45</sub> alkyl dimethicone <sup>1</sup>	8.0	6.0	7.0
C <sub>30</sub> -C <sub>45</sub> alkyl methicone <sup>2</sup>	--	6.0	
Ozokerite wax	4.0	--	--
Candelilla hydrocarbon wax <sup>3</sup>	--		6.0

<sup>1</sup> SF1642<sup>2</sup> AMS-C30 wax<sup>3</sup> Candelilla FC-31 (hydrocarbon fraction of candelilla wax from Japan Natural Products)

### Preparation

[0100] The components of phase A were mixed until uniform and then heated in an oil bath. When the temperature of the oil bath reached 110°C, C<sub>30</sub>-C<sub>45</sub> alkyl dimethicone and/or C<sub>30</sub>-C<sub>45</sub> alkyl methicone, if present, was/were added to the phase A mixture and the resulting mixture was stirred until uniform. The wax, if present, was then slowly added to the resulting mixture while maintaining the temperature of the oil bath at 110°C until the wax was completely melted and dispersed. The temperature of the mixture was lowered to 90°C-95°C at which time the bulk was poured into a mold, if possible.

### Results

[0101] Comparative Composition 4: This composition, although capable of being molded into a stick, resulted in the non-linear wax (ozokerite) becoming grainy in the stick thereby indicating instability of the composition and the absence of an emulsion. The film deposited on skin when this stick was applied to skin was rough and did not have a powdery feel.

[0102] Comparative Composition 5: This composition was incapable of being molded into a stick as it was too soft. This demonstrates that at least one dimethicone and at least one compatibilizer were insufficient to obtain the desired properties without at least one linear hydrocarbon wax.

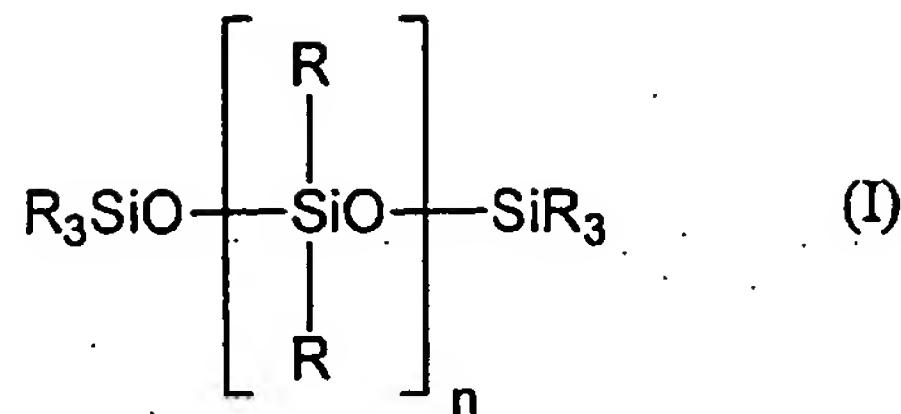
[0103] Comparative Composition 6: This composition was incapable of being molded into a stick as it was too soft. While candelilla FC-31 is a hydrocarbon wax, it includes esters, acids and some branched wax.

### Claims

1. A composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent.
2. A composition according to claim 1, wherein said composition is capable of being molded in the form of a stick.
3. A composition according to claim 2, wherein said stick is stable.

4. A composition according to claim 1, wherein said emulsion is chosen from aqueous emulsions and non-aqueous emulsions.
5. A composition according to claim 1, wherein said at least one dimethicone is chosen from dimethicones of viscosity equal to or higher than 100 cst.
6. A composition according to claim 5, wherein said at least one dimethicone is chosen from dimethicones of viscosity equal to or higher than 350 cst.
10. 7. A composition according to claim 6, wherein said at least one dimethicone is chosen from dimethicones of viscosity equal to or higher than 500 cst.
15. 8. A composition according to claim 1, wherein said at least one dimethicone is present in said composition in an amount ranging from 5% to 95% by weight relative to the total weight of said composition.
9. A composition according to claim 8, wherein said at least one dimethicone is present in said composition in an amount ranging from 20% to 80% by weight relative to the total weight of said composition.
20. 10. A composition according to claim 1, wherein said at least one linear hydrocarbon wax is solid at room temperature.
11. A composition according to claim 10, wherein said at least one linear hydrocarbon wax has a melting point greater than 35°C.
25. 12. A composition according to claim 11, wherein said at least one linear hydrocarbon wax has a melting point greater than 55°C.
13. A composition according to claim 1, wherein said at least one linear hydrocarbon wax is incompatible with at least one dimethicone of viscosity equal to or greater than 100 cst.
30. 14. A composition according to claim 13, wherein said at least one linear hydrocarbon wax is incompatible with at least one dimethicone of viscosity equal to or greater than 350 cst.
15. A composition according to claim 14, wherein said at least one linear hydrocarbon wax is incompatible with at least one dimethicone of viscosity equal to or greater than 500 cst.
35. 16. A composition according to claim 1, wherein said at least one linear hydrocarbon wax is chosen from polyethylene waxes, linear paraffin waxes, and long-chain linear alcohols.
40. 17. A composition according to claim 1, wherein said at least one linear hydrocarbon wax is chosen from substituted linear alkanes, unsubstituted linear alkanes, substituted linear alkenes, and unsubstituted linear alkenes.
18. A composition according to claim 1, wherein said at least one linear hydrocarbon wax is present in said composition in an amount ranging from 2% to 30% by weight relative to the total weight of said composition.
45. 19. A composition according to claim 18, wherein said at least one linear hydrocarbon wax is present in said composition in an amount ranging from 5% to 20% by weight relative to the total weight of said composition.
20. A composition according to claim 1, wherein said at least one compatibilizing agent is chosen from silicone polymers comprising at least one hydrocarbon group.
50. 21. A composition according to claim 20, wherein said silicone polymers comprising at least one hydrocarbon group are chosen from linear polysiloxanes comprising at least one hydrocarbon group, branched polysiloxanes comprising at least one hydrocarbon group, and cyclic linear polysiloxanes comprising at least one hydrocarbon group.
55. 22. A composition according to claim 20, wherein said at least one of said at least one hydrocarbon groups comprises at least 18 carbon atoms.
23. A composition according to claim 1, wherein said at least one compatibilizing agent is chosen from compatibilizing

agents of formula (I):



wherein

15      R, which may be identical or different, are each chosen from hydrocarbon groups; the total molecular weight of Si and O atoms is at least 10% of the total weight of said at least one compatibilizing agent of formula (I), and the melting point of said at least one compatibilizing agent of formula (I) ranges from 35°C to 110°C with the proviso that at least one R comprises at least 18 carbon atoms..

20      24. A composition according to claim 23, wherein said at least one R is chosen from C<sub>30</sub> to C<sub>45</sub> hydrocarbon groups.

25      25. A composition according to claim 23, wherein said at least one R is chosen from C<sub>30</sub> to C<sub>45</sub> alkyl groups.

30      26. A composition according to claim 1, wherein said at least one compatibilizing agent is chosen from linear polysiloxanes comprising at least one C<sub>30</sub>-C<sub>45</sub> alkyl group, C<sub>30</sub>-C<sub>45</sub> alkyl methicones, C<sub>20</sub>-C<sub>24</sub> alkyl methicones, C<sub>24</sub>-C<sub>28</sub> alkyl methicones, hexyl methicones, caprylyl methicones, lauryl methicones, stearyl methicones, cetyl dimethicone, stearyl dimethicones, C<sub>20</sub>-C<sub>24</sub> alkyl dimethicones, and C<sub>24</sub>-C<sub>28</sub> alkyl dimethicones.

35      27. A composition according to claim 1, wherein said at least one compatibilizing agent is chosen from at least one C<sub>30</sub>-C<sub>45</sub> alkyl dimethicone.

40      28. A composition according to claim 1, wherein said at least one compatibilizing agent is present in said composition in an amount ranging from 5% to 90% by weight relative to the total weight of said composition.

45      29. A composition according to claim 28, wherein said at least one compatibilizing agent is present in said composition in an amount ranging from 5% to 60% by weight relative to the total weight of said composition.

50      30. A composition according to claim 1, wherein said composition further comprises at least one low viscosity dimethicone different from said at least one dimethicone.

55      31. A composition according to claim 30, wherein said at least one low viscosity dimethicone has a lower viscosity than said at least one dimethicone.

45      32. A composition according to claim 31, wherein said at least one low viscosity dimethicone is chosen from dimethicones of viscosity lower than 100 cst.

50      33. A composition according to claim 32, wherein said at least one low viscosity dimethicone is present in said composition in an amount ranging from 5% to 80% by weight relative to the total weight of said composition.

55      34. A composition according to claim 1, wherein said at least one low viscosity dimethicone is present in said composition in an amount ranging from 10% to 60% by weight relative to the total weight of said composition.

55      35. A composition according to claim 1, wherein said composition further comprises at least one fluorosilicone.

55      36. A composition according to claim 1, wherein said composition further comprises at least one wax different from said at least one linear hydrocarbon wax.

37. A composition according to claim 1, wherein said composition further comprises at least one coloring agent.
38. A composition according to claim 37, wherein said at least one coloring agent is chosen from encapsulated pigments.
- 5 39. A composition according to claim 38, wherein said encapsulated pigments are dispersed in at least one solvent.
40. A composition according to claim 39, wherein said at least one solvent is phenyltrimethicone.
- 10 41. A composition according to claim 1, wherein said composition further comprises at least one filler.
42. A composition according to claim 1, wherein said composition further comprises at least one additive chosen from fatty materials, coloring agents, humectants, texture modifiers, antifoaming agents, moisturizers, viscosity modifiers, antioxidants, essential oils, preserving agents, fragrances, neutralizing agents, liposoluble polymers, polysaccharides, fluorinated compounds, cosmetically active agents, and dermatological active agents.
- 15 43. A composition according to claim 1, wherein said composition has a melting point ranging from 40°C to 150°C.
44. A mascara product, an eyeliner product, a foundation product, a lipstick product, a blush for cheeks or eyelids, a deodorant product, a make-up product for the body and/or hair, a make-up-removing product, an eyeshadow product, a face powder product, a concealer product, a treating shampoo product, a hair conditioning product, a sunscreen, colorant for the skin or hair, or skin care formula comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent.
- 20 45. A care, make-up, and/or treatment composition for the skin and/or the lips of the face and/or for superficial body growths comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent.
46. A non-aqueous stick composition comprising an emulsion comprising at least one dimethicone of viscosity equal to or greater than 350 cst, at least one linear polyethylene wax, and at least one C<sub>30</sub>-C<sub>45</sub> alkyl dimethicone.
- 30 47. A method for modifying the structure of a composition comprising at least one dimethicone and at least one linear hydrocarbon wax, comprising including at least one compatibilizing agent in an amount effective to mold said composition into a stick.
- 35 48. A method of increasing at least one property of a basecoat composition chosen from properties of staying power, long wear properties, glossiness, and wear comfort comprising  
applying to at least one keratinous material at least one basecoat composition; and  
applying to said basecoated keratinous material a composition comprising an emulsion comprising at least one dimethicone, at least one linear hydrocarbon wax, and at least one compatibilizing agent.
- 40 49. A method for maintaining at least one property chosen from color and gloss of a composition on at least one keratinous material, comprising applying a composition comprising at least one encapsulated pigment, wherein the at least one encapsulated pigment is dispersed in at least one silicone.

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(72) Inventor: NISHIDA YOSHIHARU  
ISHIWATARI MASAAKI  
SATO YUKAKO

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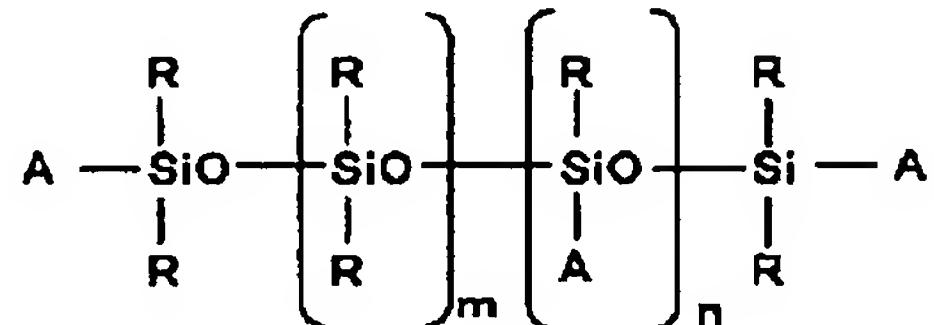
respectively.

(57) Abstract:

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PROBLEM TO BE SOLVED: To obtain a cosmetic stably containing a pearlescent powder, enabling easy spreading to the skin and exhibiting excellent usability by compounding a specific silicone compound together with a combination of a lower alcohol, water and a pearlescent powder.

SOLUTION: The objective cosmetic contains (A) a silicone oil, (B) a polyether-modified silicone of the formula (A is methyl, phenyl, or the like; R is methyl or phenyl; (m) is 50-1,000; (n) is 1-40; the molecule contains at least one polyoxyalkylene group), (C) a lower alcohol, (D) water and (E) a pearlescent powder (preferably mica coated with titanium oxide, or the like). The cosmetic is preferably further incorporated with (F) a nonionic surfactant. The amounts of the components A, B, C, D, E and F are preferably 20.0-80.0 wt.%, 2.0-30.0 wt.%, 0.1-60.0 wt.%, 0.1-60.0 wt.%, 0.01-60.0 wt.% and 0.01-20.0 wt.%, based on the total cosmetic,



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(22) Date of filing : 18.02.1999 (72) Inventor : NISHIDA YOSHIHARU  
ISHIWATARI MASAAKI  
SATO YUKAKO

**(54) COSMETIC**

**(57) Abstract:**

**PROBLEM TO BE SOLVED:** To obtain a cosmetic stably containing a pearlescent powder, enabling easy spreading to the skin and exhibiting excellent usability by compounding a specific silicone compound together with a combination of a lower alcohol, water and a pearlescent powder.

**SOLUTION:** The objective cosmetic contains (A) a silicone oil, (B) a polyether-modified silicone of the formula (A is methyl, phenyl, or the like; R is methyl or phenyl; (m) is 50-1,000; (n) is 1-40; the molecule contains at least one polyoxyalkylene group), (C) a lower alcohol, (D) water and (E) a pearlescent powder (preferably mica coated with titanium oxide, or the like). The cosmetic is preferably further incorporated with (F) a nonionic surfactant. The amounts of the components A, B, C, D, E and F are preferably 20.0-80.0 wt.%, 2.0-30.0 wt.%, 0.1-60.0 wt.%, 0.1-60.0 wt.%, 0.01-60.0 wt.% and 0.01-20.0 wt.%, based on the total cosmetic, respectively.

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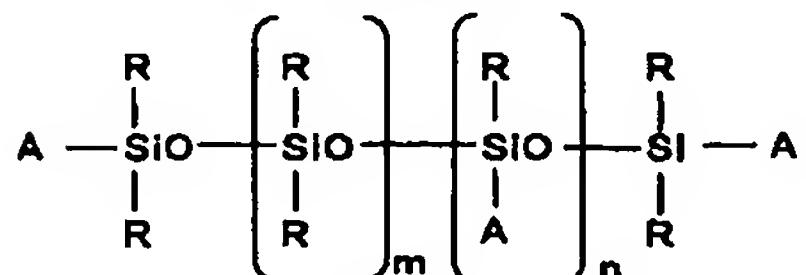
CLAIMS

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[Claim(s)]

[Claim 1] (A) Cosmetics characterized by containing silicon oil, the polyether denaturation silicone shown by the (B) following general formula (1), (C) lower alcohol, (D) water, and (E) pearl system powder.

[Formula 1] General formula (1)



The inside of [type and A are methyl group, phenyl group, and general formula:-C<sub>3</sub>H<sub>6</sub>O(C<sub>2</sub>H<sub>4</sub>O)<sub>b</sub>R' (among a formula). R' is a radical chosen from the group which consists of a hydrogen atom, an acyl group, and an alkyl group of carbon numbers 1-4, and a and b are the integers of 5-50, respectively. It is the radical chosen from the group which consists of a polyoxyalkylene group shown, and R is [ the integer of 50 to 1000 and n of a methyl group or a phenyl group, and m ] the integers of 1 to 40. However, at least one piece has a polyoxyalkylene group in a molecule.] [Claim 2] Cosmetics according to claim 1 characterized by pearl system powder being a titanium oxide coated mica, titanium oxide coated bismuth oxychloride, titanium oxide coated talc, a coloring titanium oxide coated mica, bismuth oxychloride, a scales foil, aluminum powder, or kappa powder.

[Claim 3] Cosmetics according to claim 1 or 2 to which pearl system powder is characterized by being hydrophobic pearl system powder.

[Claim 4] Furthermore, cosmetics according to claim 1, 2, or 3 characterized by containing a nonionic surface active agent.

[Claim 5] Furthermore, cosmetics according to claim 1, 2, 3, or 4 characterized by containing an organic denaturation clay mineral.

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DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention relates to skin cosmetics. There is no stickiness at the time of spreading in more detail lightly [ the mileage which made stability contain pearl system powder ], and it is related with the cosmetics after spreading in which \*\* was excellent in the least.

[0002]

[Description of the Prior Art] Since silicon oil has the feel which mileage felt refreshed lightly, it is blended with various cosmetics and quasi drugs including makeup cosmetics and hair cosmetics.

[0003] Especially in gel cosmetics, it is used for liquefied foundation, sun screen gel, a moisture cream, hair gel, a hidroscheisis cream, etc. The cosmetics (JP,63-152308,A) containing the gel constituent and this which become the silicon oil 100 weight section from the gel constituent (JP,3-6179,B) and the ORGANO hydrogen polysiloxane bridge formation polymerization object containing dextrin fatty acid ester 2 - 30 weight sections, and hypoviscosity silicon oil as a gel constituent containing silicon oil etc. are proposed.

[0004]

[Problem(s) to be Solved by the Invention] However, when the silicon oil content gel cosmetics of these former contained pearl system powder, it passed through

them, and they had the trouble that the stability in the time worsened.

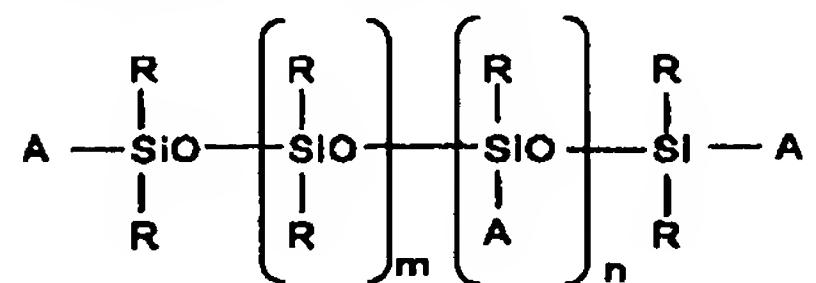
[0005] It came to complete a header and this invention for the ability of the above-mentioned technical problem to be solved, if a specific silicone compound is blended and it blends combining lower alcohol, water, and pearl system powder as a result of this invention persons' repeating research wholeheartedly in view of the above-mentioned situation.

[0006] This invention aims at mileage being light, and there being no stickiness at the time of spreading, and offering the cosmetics after spreading which were excellent in usability, such as \*\*, in the least, and contained pearl system powder in stability.

[0007]

[Means for Solving the Problem] That is, the cosmetics characterized by this invention containing (A) silicon oil, the polyether denaturation silicone shown by the (B) following general formula (1), (C) lower alcohol, (D) water, and (E) pearl system powder are offered.

[Formula 2] General formula (1)



The inside of [type and A are methyl group, phenyl group, and general formula:-C<sub>3</sub>H<sub>6</sub>O(C<sub>2</sub>H<sub>4</sub>O)<sub>a</sub>(C<sub>3</sub>H<sub>6</sub>O)<sub>b</sub>R'] (among a formula). R' is a radical chosen from the group which consists of a hydrogen atom, an acyl group, and an alkyl group of carbon numbers 1-4, and a and b are the integers of 5-50, respectively. It is the radical chosen from the group which consists of a polyoxyalkylene group shown, and R is [the integer of 50 to 1000 and n of a methyl group or a phenyl group, and m] the integers of 1 to 40. However, at least one piece has a polyoxyalkylene group in a molecule.] [0008] Moreover, this invention offers the aforementioned cosmetics whose pearl system powder is a titanium oxide coated mica, titanium oxide coated bismuth oxychloride, titanium oxide coated talc, a coloring titanium oxide coated mica, bismuth oxychloride, a scales foil, aluminum powder, or kappa powder.

[0009] Furthermore, this invention offers the aforementioned cosmetics whose pearl system powder is hydrophobic pearl system powder.

[0010] Moreover, this invention offers further the aforementioned cosmetics characterized by containing a nonionic surface active agent.

[0011] Furthermore, this invention offers further the aforementioned cosmetics characterized by containing an organic denaturation clay mineral.

[0012]

[Embodiment of the Invention] Hereafter, the configuration of this invention is explained in full detail.

[0013] Although especially the silicon oil used for this invention is not limited, specificallyFor example, dimethylpolysiloxane, a methylphenyl polysiloxane, Diorganopolysiloxane from hypoviscosity, such as a dimethylpolysiloxane methylphenyl polysiloxane copolymer, to hyperviscosity; Octamethylcyclotetrasiloxane, Annular polysiloxanes, such as decamethyl cyclopentasiloxane and tetramethyl tetra-phenyl cyclotetrasiloxane; High-polymer gum-like dimethylpolysiloxane, A gum-like dimethylsiloxane methylphenyl siloxane copolymer, Gum-like methyopolysiloxane, the cyclosiloxane solution of a trimethylsiloxy silicic acid; various denaturation silicone, such as amino denaturation silicone, high-class alkoxy denaturation silicone, higher-fatty-acid denaturation silicone, alkyl denaturation silicone, and fluorine denaturation silicone, etc. can be used. In these, when an annular polysiloxane, especially annular decamethyl cyclopentasiloxane are used, the stability of cosmetics is

high.

[0014] Although a kind of the above-mentioned silicon oil or two sorts or more are chosen in the cosmetics of this invention, it is used and especially the loadings are not limited, 20.0 - 80.0 % of the weight is desirable among the cosmetics whole quantity. Still more preferably, it attaches and is 25 - 60 % of the weight among the cosmetics whole quantity at the spreading backward point which was described at the time of the lightness of mileage, and spreading and which is \*\* in the least. Even if less than 20.0 % of the weight is not enough in respect of stability and it blends exceeding 80 % of the weight, the further rise of stability is not expectable.

[0015] The polyether denaturation silicone used for this invention is an organopolysiloxane graft polymer which has the polyoxyalkylene group shown by said general formula (1). As an acyl group of R', a formyl group, an acetyl group propionyl radical, a butyryl radical, an acryloyl radical, benzoyl, a toluoyl radical, etc. are mentioned, and, specifically, a methyl group, an ethyl group, i-propyl group, n-propyl group, t-butyl, n-butyl, etc. are mentioned as an alkyl group of carbon numbers 1-4.

[0016] In a polyoxyalkylene group, when it stops showing thickening effectiveness with polyether denaturation silicone sufficient when a or b is less than five and b exceeds a or 50, the obtained cosmetics are sticky and it comes to have admiration.

[0017] Although especially the content of a polyoxyalkylene group is not limited, it is desirable for the content of a polyoxyalkylene group to be 20 - 70 % of the weight (however, for it not to contain 20% of the weight.). This is for the thickening effectiveness of polyether denaturation silicone to fall remarkably, when the content of a polyoxyalkylene group is 20 or less % of the weight, and when exceeding 70 % of the weight, it is for compatibility with silicon oil to fall.

[0018] Moreover, m is the integer of 50-1000, n is the integer of 1-40, and 200-600n of m are 5-20 preferably. This is because the chosen cosmetics are sticky and it comes to have admiration, when the thickening effectiveness is inadequate, and m exceeds 1000, when m is less than 50 and n is less than one, and n exceeds 40.

[0019] Especially although especially the molecular weight of the polyether denaturation silicone used for this invention is not limited and especially the viscosity in the 25 degrees C is not limited, in order to consider as the cosmetics which form stable gel and have admiration smoothly, it is desirable that it is that from which the viscosity when considering as the 50.0-% of the weight solution of an octamethyl tetra-siloxane serves as the range of 1000 - 100000 mPa·s. Moreover, the range of molecular weight of 50000-80000 is [ 50000 or more ] preferably desirable from the field of stability and usability.

[0020] The loadings of polyether denaturation silicone are 2.0 - 30.0 % of the weight among the cosmetics whole quantity, and are 5.0 - 15.0% of the weight of the range preferably. It is because stable cosmetics cannot be obtained as the loadings of polyether denaturation silicone are less than 2.0 % of the weight, and when it exceeds 30.0 % of the weight, it is because cosmetics are sticky and it comes to have admiration.

[0021] Although especially the lower alcohol used for this invention is not limited, ethyl alcohol and its isopropyl alcohol are desirable.

[0022] Among the cosmetics whole quantity, 0.1 - 60.0 % of the weight is desirable still more desirable, and the loadings of lower alcohol are 5.0 - 20 % of the weight most preferably 2.0 to 50.0% of the weight. If stable cosmetics are not obtained with the loadings of lower alcohol being less than 0.1 % of the weight and it exceeds 60.0 % of the weight, alcohol dissociates from cosmetics and stable cosmetics may be hard to be obtained.

[0023] Among the cosmetics whole quantity, it is desirable still more desirable that it is 0.1 - 60.0% of the weight of the range, and the loadings of the water used for this invention are 2.0 - 50.0% of the weight of the range. If stable

skin cosmetics are not obtained with the loadings of water being less than 0.2 % of the weight and it exceeds 60.0 % of the weight, water dissociates from cosmetics and stable cosmetics may be hard to be obtained.

[0024] Although especially the pearl system powder used for this invention is not limited, specifically, a titanium oxide coated mica, titanium oxide coated bismuth oxychloride, a coloring titanium oxide coated mica, bismuth oxychloride, a scales foil, aluminum powder, kappa powder, etc. are mentioned.

[0025] Moreover, the pearl system powder used for this invention can also use that by which hydrophobing processing was carried out with the conventional method.

[0026] Among the cosmetics whole quantity, it is desirable still more desirable that it is 0.01 - 60.0% of the weight of the range, and the loadings of pearl system powder are 0.05 - 30.0% of the weight of the range. When the loadings of pearl system powder exceed 60.0 % of the weight, stable cosmetics are hard to be obtained, and this comes to have the feeling of a rough deposit of pearl system powder also in respect of usability, and is 30.0 or less % of the weight preferably. Moreover, although a minimum is not limited especially in respect of stability, in order to obtain a feeling of a pearl, 0.01 % of the weight or more is 0.05 % of the weight or more desirable still more preferably.

[0027] If a nonionic surface active agent is used further, usability and stability of this invention will improve. Although it can choose what has suitable HLB by the oil configuration to be used, when the usual hydrocarbon system, ester oil, etc. are used, as for a nonionic surfactant, what has the HLB value within the limits of 2-16 is desirable, and its thing in the range of 3-12 is still more desirable. For example, it omits below two - 30 mol addition [ of polyoxyethylenes ] {POE (2-30). } oleyl ether, POE (2-35) stearyl ether, the POE (2-20) lauryl ether, The POE (1-20) alkylphenyl ether, POE (6-18) behenyl ether, The POE(5-25)2-DESHIRU pentadecyl ether, the POE(3-30)2-decyl tetradecyl ether, Ether mold activators, such as the POE(8-16)2-octyl DESHIRU ether and POE (4-60) hydrogenated castor oil ;P OE (3-14) fatty acid monoester, Ester mold activators, such as POE (6-30) fatty-acid diester and a POE (5-20) sorbitan fatty acid ester ;P OE (2-30) glyceryl monoisostearate, POE (10-60) glyceryl TORIISO stearate, POE (7-50) hydrogenated-castor-oil monoisostearate, Ethyleneoxide mold surfactants, such as POE (12-60) hydrogenated-castor-oil TORIISO stearate; A polyhydric-alcohol fatty-acid-ester mold surfactant for example, decaglyceryl tetra-olate and hexa glyceryl TORIISO stearate --Polyglyceryl fatty acid ester, such as tetra-glyceryl diisostearate and diglyceryl diisostearate; glycerine fatty acid esters, such as glyceryl monostearate, glyceryl monoisostearate, and glyceryl mono-olate, are mentioned. In these, decaglyceryl tetra-olate, hexa glyceryl TORIISO stearate, Polyglyceryl fatty acid ester more than triglycerols, such as tetra-glyceryl diisostearate, ;P OE (2-12) oleyl ether, POE (3-12) stearyl ether, the POE (2-10) lauryl ether, The POE (2-10) nonylphenyl ether, POE (6-15) behenyl ether, The POE(5-20)2-DESHIRU pentadecyl ether, the POE(5-17)2-decyl tetradecyl ether, POE addition ether mold activators, such as the POE(8-16)2-octyl DESHIRU ether and POE (10-20) hydrogenated castor oil ;P OE (5-14) oleic acid monoester, POE addition ester mold activators, such as POE (6-20) oleic acid diester and POE (5-10) sorbitan oleate ;P OE (3-15) glyceryl monoisostearate, POE addition ether ester mold activators, such as POE (10-40) glyceryl torr isostearate; especially nonionic surfactants, such as polyoxyalkylene denaturation organopolysiloxane, are desirable.

[0028] Among the cosmetics whole quantity, it is desirable still more desirable that it is 0.01 - 20.0 % of the weight, and the loadings of the nonionic surface active agent used for this invention are 0.1 - 10.0 % of the weight.

[0029] In this invention, if an organic denaturation clay mineral is used further, usability and stability will improve. Although especially an organic denaturation clay mineral is not limited, specifically, the organic denaturation clay mineral which processes a water expansive clay mineral with a quaternary-ammonium-salt mold cationic surface active agent, and is obtained is mentioned. the stratified

silicate mineral which belongs to a smectite group as a water expansive clay mineral -- it is -- general -- a montmorillonite and beidellite -- non -- fatty tuna -- there may be a light, saponite, a HERAKU light, etc. and these may be any of nature or synthetic compounds. In a commercial item, there are KUNIPIA, smecton (all are Kunimine Industries), veegum (Vanderbilt), a DAIMO night, a fluorine 4 silicon mica (Topy Industries), RAPONAITO (RAPORUTE), etc. As a quarternary-ammonium-salt mold cationic surface active agent, there are dialkyl dimethylene ammonium salt; alkyl dimethylbenzyl ammonium, such as alkyl trimethylammonium salt; chlorination distearyltrimethylbenzylammonium, such as stearyl chloride trimethylammonium and chlorination lauryl trimethylammonium, a benzalkonium chloride, etc., for example. The organic denaturation clay mineral used for this invention processes a kind or two sorts or more of water expansive clay minerals chosen from the above-mentioned water expansive clay minerals with a kind or two sorts or more of quarternary-ammonium-salt mold cationic surface active agents chosen from the above-mentioned quarternary-ammonium-salt mold cationic surface active agents, and is obtained.

[0030]A kind or two sorts or more are chosen, the organic denaturation clay mineral used for this invention is used, among the cosmetics whole quantity, 0.01 - 10.0% of the weight of the range is desirable still more desirable, and the loadings are 0.1 - 5.0% of the weight of the range.

[0031]In addition to the indispensable component described above to the cosmetics of this invention, components usually used for cosmetics, such as a moisturizer, an emulsifier, an ultraviolet ray absorbent, perfume, an antioxidant, a preservation-from-decay antifungal agent, powder, an extender, a coloring agent, and pH regulator, can be blended in the range which does not spoil the effectiveness of this invention, and can be manufactured with a conventional method according to the dosage forms made into the purpose.

[0032]Especially the dosage forms of the cosmetics of this invention are not restricted, and can also apply a product gestalt to all the products that can be [ hair products, such as makeup products, such as skin care products, such as a makeup oil, an essence, a milky lotion, body oil, body gel, suntan oil, and a sun screen, makeup base, foundation, eye shadow, an eyeliner, mascara and a lip stick, hair gel, and a hair cream a hidroscheisis cream, etc. ] adapted.

[0033]

[Example]Hereafter, an example is given and this invention is explained in more detail. In addition, this invention is not limited by the following examples. Moreover, loadings are weight % as long as there is no notice especially.

[0034]The pearl system powder combination body gel of the example of a formula shown in "examples 1-5" and "Table 1" was manufactured, and the use test of ten evaluation special panels estimated usability in accordance with the following valuation bases. Moreover, each body gel was saved on each temperature conditions (-10 degrees C, 0 degree C, a room temperature (RT), 37 degrees C, and 50 degrees C), and stability was evaluated for the viscosity of four weeks after, and appearance change in accordance with the following valuation bases. A result is combined and is shown in "Table 1."

[0035]O: (Usability valuation basis) Mileage is light, there is no stickiness at the time of spreading, and the person after coolness and spreading whom \*\* answered in the least that it was very good is nine or more persons among ten persons.

O : mileage is light, there is no stickiness at the time of spreading, and the person after coolness and spreading whom \*\* answered in the least that it was very good is six - eight or more persons among ten persons.

\*\*: Mileage is light, there is no stickiness at the time of spreading, and the person after coolness and spreading whom \*\* answered in the least that it was very good is 3-5 or more persons among ten persons.

x: Mileage is light, there is no stickiness at the time of spreading, and the person after coolness and spreading whom \*\* answered in the least that it was

very good is below a binary name in ten persons.

(Stability valuation basis)

O With no change on each temperature conditions after [ of : ] four weeks.

O Although it changes slightly at -10 degrees C or 50 degrees C after [ of : ] four weeks, it is the inside of permission.

\*\*: Change at -10 degrees C or 50 degrees C after four weeks, and it is permission outside.

x: Change on each temperature conditions after four weeks, and it is permission outside.

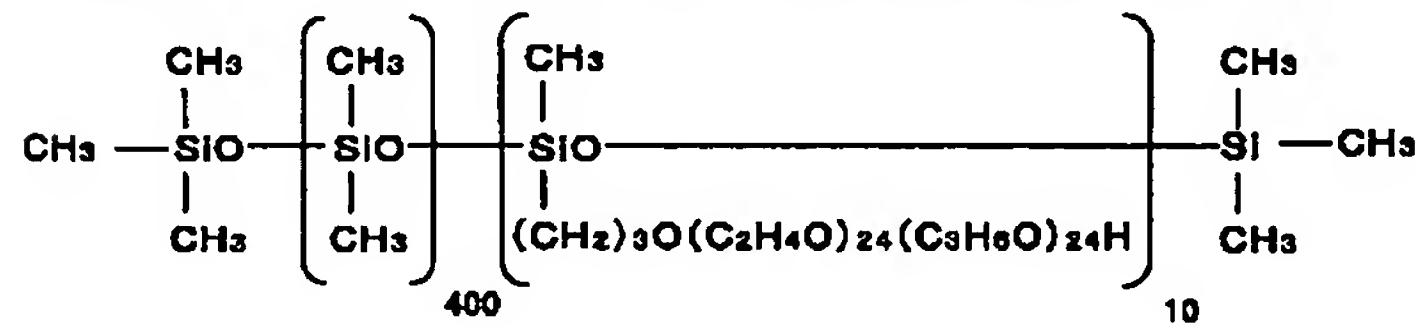
[0036]

[Table 1]

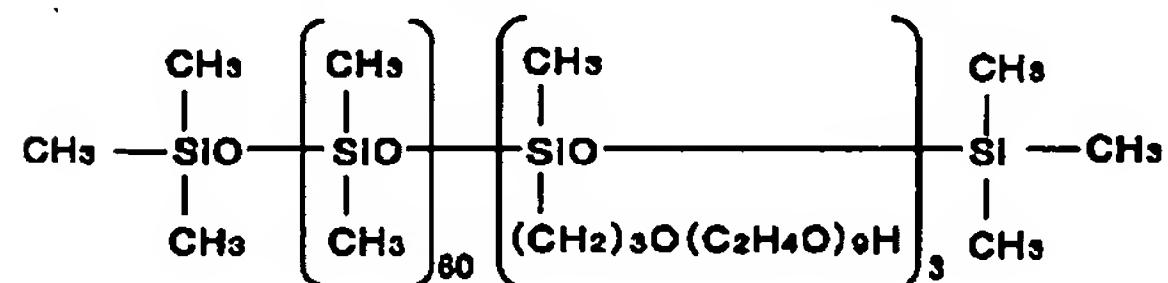
	実施例1	実施例2	実施例3	実施例4	実施例5
(1)デカメチルシクロペンタシロキサン	30.99	30.9	25.0	21.0	16.0
(2)ジメチルポリシロキサン・メチルポリシロキサン共重合体	2.0	2.0	2.0	2.0	2.0
(3)ポリエーテル変性シリコーン *1	6.0	6.0	6.0	6.0	6.0
(4)ポリエーテル変性シリコーン *2	4.0	4.0	4.0	4.0	4.0
(4)エタノール	10.0	10.0	10.0	10.0	10.0
(5)イオン交換水	残余	残余	残余	残余	残余
(6)1, 3-ブチレングリコール	3.0	3.0	3.0	3.0	3.0
(7)酸化チタンコーテッドオキシ塩化ビスマス	2.0	2.0	2.0	2.0	2.0
(8)グリセリルモノイソステアレート	—	0.1	10.0	20.0	25.0
(9)パラベン	適量	適量	適量	適量	適量
(10)酸化防止剤	適量	適量	適量	適量	適量
(11)香料	適量	適量	適量	適量	適量
使用性	◎	◎	◎	○	△
安定性	○	◎	◎	◎	◎

<EMI ID=000004 HE=065 WI=154 LX=0280 LY=1450> [0037] The mixed solution of (5) - (7) was made to add and gel, after carrying out the mixed dissolution of the (1) - (4) and (9) - in <the process "Table 1" of examples 1-5> (12) at a room temperature, continuing stirring by the homomixer. (8) was added to this, and after mixed distribution, it deaerated, and filled up with the homomixer, and pearl system powder combination body gel was obtained. In addition, polyether denaturation silicone used what has the following structures.

[Formula 3] (3) Polyether denaturation silicone \*1



[Formula 4] (4) Polyether denaturation silicone \*2



[0038] The pearl system powder combination foundation of a formula shown in "Table 2" was manufactured, and the use test of ten evaluation special panels estimated usability in accordance with the following valuation bases. Moreover, each foundation was saved on each temperature conditions (-10 degrees C, 0 degree C, a room temperature (RT), 37 degrees C, and 50 degrees C), and stability was evaluated for the viscosity of four weeks after, and appearance change in accordance with the following valuation bases. A result is combined and is shown in "Table 2."

[0039] O: (Usability valuation basis) Mileage is light, it is not sticky at the time of spreading, and the person after coolness and spreading who was excellent

in \*\* in the least, and answered that a feeling of a fit, a result, and makeup \*\*\*\* were still very better is nine or more persons among ten persons.

O : mileage is light, it is not sticky at the time of spreading, and the person after coolness and spreading who was excellent in \*\* in the least, and answered that a feeling of a fit, a result, and makeup \*\*\*\* were still very better is 6-8 persons among ten persons.

\*\*: Mileage is light, it is not sticky at the time of spreading, and the person after coolness and spreading who was excellent in \*\* in the least, and answered that a feeling of a fit, a result, and makeup \*\*\*\* were still very better is 3-5 persons among ten persons.

x: Mileage is light, it is not sticky at the time of spreading, and the person after coolness and spreading who was excellent in \*\* in the least, and answered that a feeling of a fit, a result, and makeup \*\*\*\* were still very better is below a binary name in ten persons.

[0040] (Stability valuation basis)

O With no change on each temperature conditions after [ of : ] four weeks.

O Although it changes slightly at -10 degrees C or 50 degrees C after [ of : ] four weeks, it is the inside of permission.

\*\*: Change at -10 degrees C or 50 degrees C after four weeks, and it is permission outside.

x: Change on each temperature conditions after four weeks, and it is permission outside.

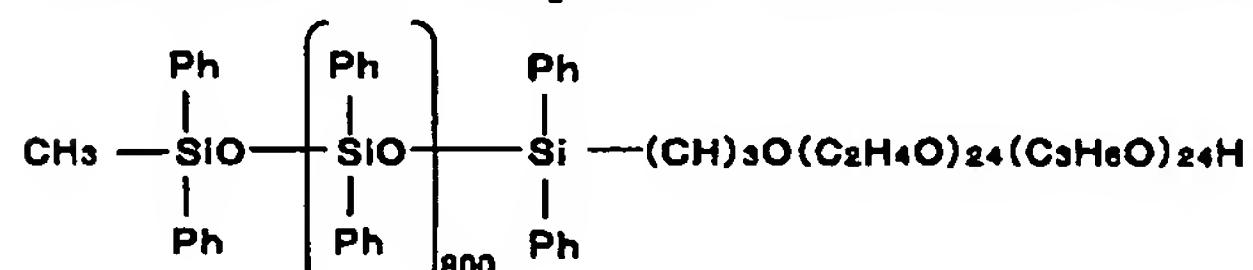
[0041]

[Table 2]

	実施例6	実施例7	実施例8	実施例9	実施例10
(1)デカメチルシクロペンタシロキサン	30.99	30.9	26.0	21.0	16.0
(2)トリメチルシロキシケイ酸・環状シロキサン溶液(30重量%)	5.0	5.0	5.0	5.0	5.0
(3)ポリエーテル変性シリコーン *3	6.0	6.0	6.0	6.0	6.0
(4)エタノール	10.0	10.0	10.0	10.0	10.0
(5)イオン交換水	残余	残余	残余	残余	残余
(6)グリセリン	4.0	4.0	4.0	4.0	4.0
(7)ジプロピレングリコール	3.0	3.0	3.0	3.0	3.0
(8)酸化チタンコーテッドマイカ	2.0	2.0	2.0	2.0	2.0
(9)ジメチルシリル化無水珪酸	15.0	15.0	15.0	15.0	15.0
(10)ジメチルポリシロキサン処理酸化チタン	13.0	13.0	13.0	13.0	13.0
(11)パルミチン酸デキストリン処理酸化鉄	1.0	1.0	1.0	1.0	1.0
(12)パルミチン酸デキストリン処理タルク	2.0	2.0	2.0	2.0	2.0
(13)ジオクタデシルジメチルアンモニウム塩変性モンモリロナイト	—	0.1	5.0	10.0	15.0
(14)パラベン	適量	適量	適量	適量	適量
(15)酸化防止剤	適量	適量	適量	適量	適量
(16)香料	適量	適量	適量	適量	適量
使用性	◎	◎	◎	○	△
安定性	○	◎	◎	◎	◎

[0042] The mixed solution of (4) - (7) was made to add and gel, after carrying out the mixed dissolution of the (1) - (3) and (14) - in <the process "Table 2" of examples 6-10> (16) at a room temperature, continuing stirring by the homomixer. (8) - (13) was added to this, and after mixed distribution, it deaerated, and filled up with the homomixer, and pearl system powder combination foundation was obtained. In addition, polyether denaturation silicone used what has the following structures.

[Formula 5] (3) Polyether denaturation silicone \*3



Phはフェニル基を示す。

[0043] The result of "Table 1 and 2" shows that the cosmetics of this invention have the outstanding usability and stability.

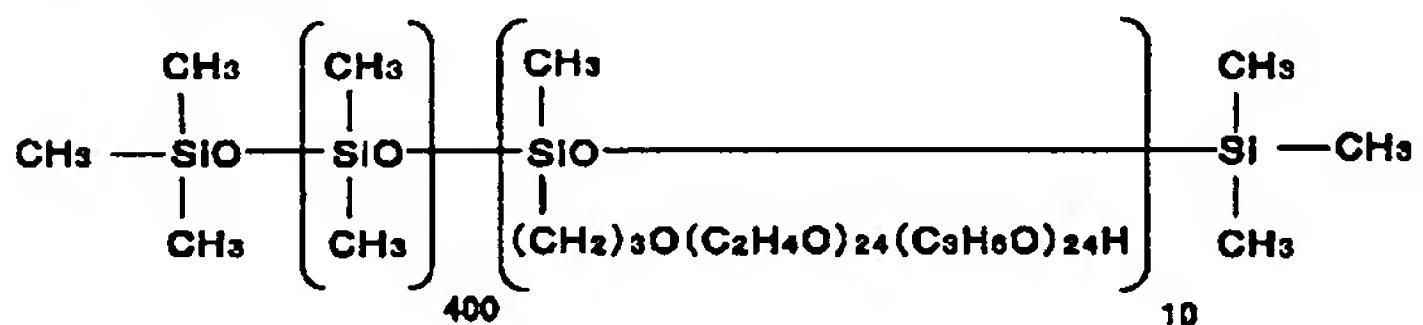
[0044] Although the example of others of this invention is given to below, it has the usability and stability which were excellent in any example.

[0045]

Example 11 Pearl system powder combination makeup oil (1) decamethyl cyclopentasiloxane 78.0-% of the weight (2) dimethylpolysiloxane (6CS) 2.0(3) polyether denaturation silicone \* 12.0 (4) ethanol 7.0 (5) ion exchange water A 10.0(6) titanium-oxide coated mica 1.0 (7) paraben \*\* Amount (8) antioxidant \*\* Amount (9) perfume \*\* Amount \* polyether denaturation silicone used what has the following structures.

[0046]

[Formula 6]



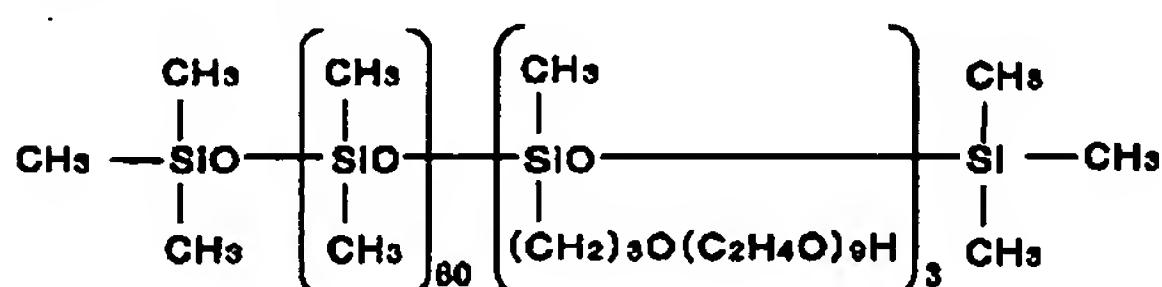
[0047] (Process) (1) - (3) and (7) The mixed solution of (4) and (5) was made to add and gel, after carrying out the mixed dissolution of - (9) at a room temperature, continuing stirring by the homomixer. (6) was added to this, and after mixed distribution, it deaerated, and filled up with the homomixer, and the pearl system powder combination makeup oil was obtained.

[0048]

Example 12 Pearl system powder combination sun screen (1) octamethylcyclotetrasiloxane 46.5-% of the weight (2) dimethylpolysiloxane (20CS) 2.0(3) polyether denaturation silicone \* 5.0 (4) ethanol 20.0 (5) menthol 0.5 (6) ion exchange water \*\* Complementary (7) titanium-oxide coated bismuth oxychloride 1.0 (8) titanium oxide 5.0 (9) zinc oxides 10.0 (10) ultraviolet ray absorbents \*\* Amount (11) paraben \*\* Amount (12) antioxidant \*\* Amount (13) perfume \*\* Amount \* polyether denaturation silicone used what has the following structures.

[0049]

[Formula 7]



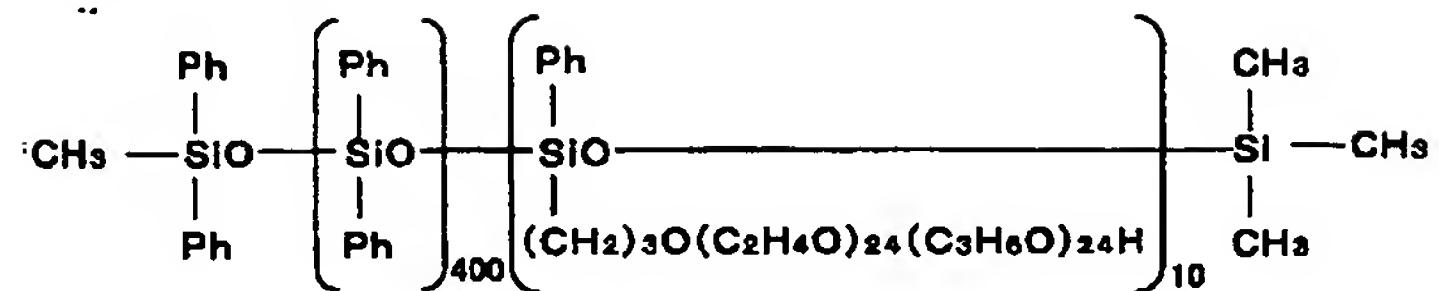
[0050] (Process) (1) - (3) and (10) The mixed solution of (4) - (6) was made to add and gel, after carrying out the mixed dissolution of - (13) at a room temperature, continuing stirring by the homomixer. (7) - (9) was added to this, and after mixed distribution, it deaerated, and filled up with the homomixer, and the pearl system powder combination sun screen was obtained.

[0051]

Example 13 Eye-shadow (1) decamethyl cyclopentasiloxane 40.0-% of the weight methylphenyl [ (2) ] polysiloxane 2.0(3) polyether denaturation silicone \* 20.0 (4) ethanol 8.0 (5) ion exchange water \*\* Complementary (6) coloring titanium oxide coated mica 17.0(7) aluminum powder 3.0 (8) paraben \*\* Amount (9) antioxidant \*\* Amount (10) perfume \*\* Amount (11) POE(20) 2-DESHIRU pentadecyl ether 0.01 (12) distearyldimethylbenzylammonium salt denaturation MOMEMI night 0.01\* polyether denaturation silicone used what has the following structures.

[0052]

## [Formula 8]



Phはフェニル基を示す。

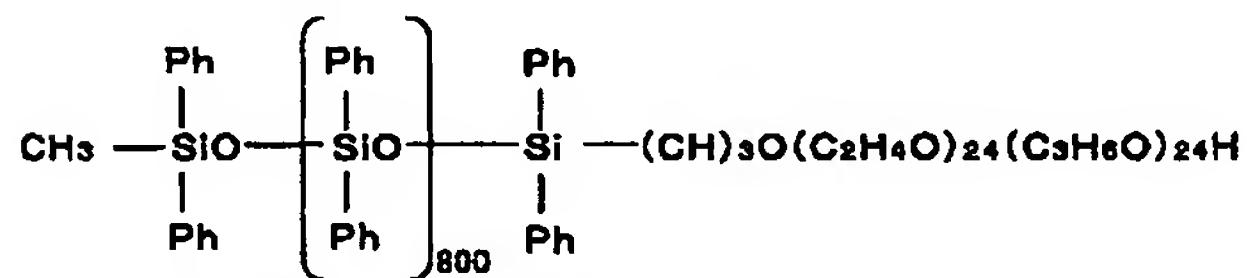
[0053] (Process) (1) - (3) and (8) The mixed solution of (4) and (5) was made to add and gel, after carrying out the mixed dissolution of - (10) at a room temperature, continuing stirring by the homomixer. (11) was added to this and (6), (7), and (12) were added further, and after mixed distribution, it deaerated, and filled up with the homomixer, and pearl system powder combination eye shadow was obtained.

[0054]

Example 14 Pearl system powder combination suntan oil (1) decamethyl cyclopentasiloxane 27.0-% of the weight polyether [ (2) ] denaturation silicone \* 25.0 (3) ethanol 30.0 (4) ion exchange water \*\* Complementary (5) coloring titanium oxide coated mica 1.0 (6) paraben \*\* Amount (7) antioxidant \*\* Amount (8) perfume \*\* Amount \* polyether denaturation silicone used what has the following structures.

[0055]

## [Formula 9]



Phはフェニル基を示す。

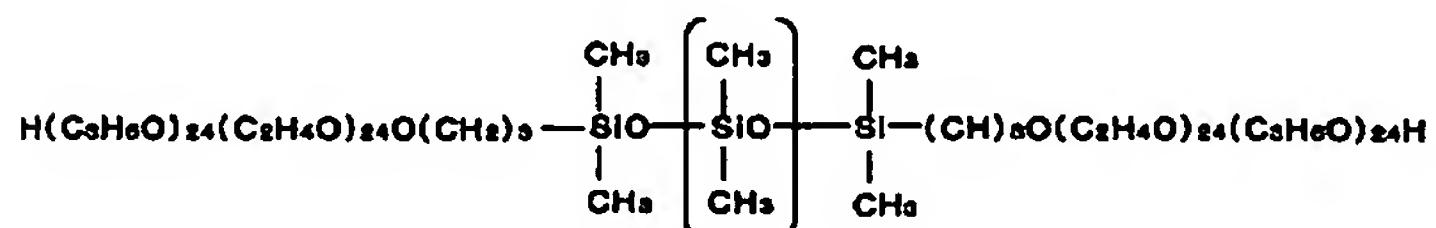
[0056] (Process) The mixed solution of (3) and (4) was made to add and gel, after carrying out the mixed dissolution of (1), (2), and (6) - (8) at a room temperature, continuing stirring by the homomixer. (5) was added to this, and after mixed distribution, it deaerated, and filled up with the homomixer, and pearl system powder combination suntan oil was obtained.

[0057]

Example 15 Pearl system powder combination moisture cream (1) decamethyl cyclopentasiloxane A 57.0-% of the weight tetramethyl [ (2) ] TETORAFENIRUSHIKURO tetra-hexane 3.0(3) polyether denaturation silicone \* 6.0 (4) ethanol 8.0 (5) isopropyl alcohol 2.0 (6) ion exchange water \*\* Complementary (7) glycerol 2.0 (8) dipropylene glycols 5.0 (9) bismuth oxychlorides 1.0 (10) paraben \*\* Amount (11) antioxidant \*\* Amount (12) perfume \*\* Amount (13) POE (60) hydrogenated castor oil 2.0 (14) stearyl trimethylammonium salt denaturation Mommori night 1.0\* polyether denaturation silicone used what has the following structures.

[0058]

## [Formula 10]



[0059] (Process) (1) - (3) and (10) The mixed solution of (4) - (8) was made to add and gel, after carrying out the mixed dissolution of - (13) at a room temperature, continuing stirring by the homomixer. (9) and (14) were added to this, and after mixed distribution, it deaerated, and filled up with the homomixer, and the pearl system powder combination moisture cream was obtained.

[0060]

[Effect of the Invention] According to this invention, mileage is light, and there is no stickiness at the time of spreading, and the cosmetics after spreading which were excellent in usability, such as \*\*, in the least, and contained pearl system powder in stability can be offered.

(19)



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(71) Applicant: **SHISEIDO CO LTD**

(72) Inventor: **KUROSAWA TAKAFUMI  
UEDA HIROMI  
YAMAGUCHI KAZUHIRO  
KANAMARU TETSUYA**

(54) SUNSCREEN COSMETIC

low oil absorption and a low apparent specific volume.

(57) Abstract:

PROBLEM TO BE SOLVED: To provide an emulsion sunscreen cosmetic improved in easiness in washing out after application by stably compounding a sunscreen cosmetic with an ultraviolet scattering agent being a hydrophobized powder having prominent effects, e.g., a

SOLUTION: The sunscreen cosmetic comprises (a) a specified hydrophobized zinc oxide powder, (b) decamethylcyclopentasiloxane, and (c) a 6 to 12C alkyl trimethicone.

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(22) Date of filing : 19.02.2004 (72) Inventor : KUROSAWA TAKAFUMI  
UEDA HIROMI  
YAMAGUCHI KAZUHIRO  
KANAMARU TETSUYA

**(54) SUNSCREEN COSMETIC**

**(57) Abstract:**

**PROBLEM TO BE SOLVED:** To provide an emulsion sunscreen cosmetic improved in easiness in washing out after application by stably compounding a sunscreen cosmetic with an ultraviolet scattering agent being a hydrophobized powder having prominent effects, e.g., a low oil absorption and a low apparent specific volume.  
**SOLUTION:** The sunscreen cosmetic comprises (a) a specified hydrophobized zinc oxide powder, (b) decamethylcyclopentasiloxane, and (c) a 6 to 12C alkyl trimethicone.

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## **CLAIMS**

[Claim(s)]

[Claim 1]

The following component (a) Sunscreen cosmetics characterized by containing - (c).

(a) Distribute zinc-oxide powder in a solvent,

Phosphoric ester which has perfluoroalkyl shown by the general formula (1),

In the approach shown by the general formula (2) molecular weight performs surface treatment by the ester of what permuted a part of copolymer of the 2-ethylhexyl acrylate of 30,000-300,000, a methacrylic acid, a methyl methacrylate, and methacrylic-acid butyl, and methyl group of methyopolysiloxane by the hydroxypropyl radical, and manufactures hydrophobing processing zinc-oxide powder,

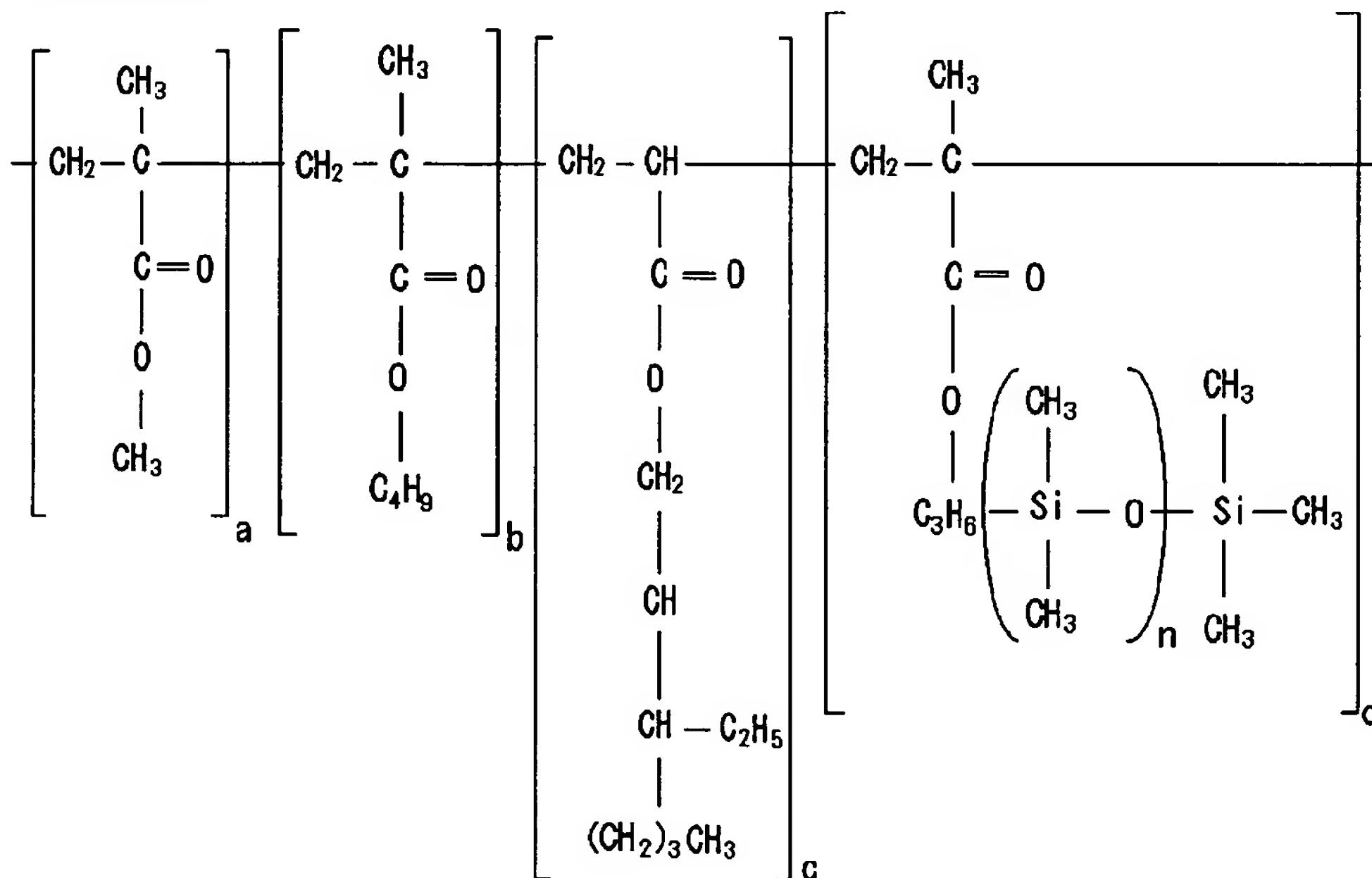
Hydrophobing processing zinc-oxide powder manufactured by using the particle zinc-oxide powder not more than 1 order particle diameter 1micrometer, and performing the amount of the solvent used in the range of the range of 50 - 90 mass % to this zinc-oxide powder.

[Formula 1]



(Among a formula, the perfluoroalkyl radical or perfluoro oxy-alkyl group of carbon numbers 3-21 may be shown, and Rf may be the shape of a straight chain, and a letter of branching, and may belong to single chain length, or may belong to compound chain length.)n shows the integer of 1-12 and y shows the number of 1-3.

[Formula 2]



(2)

(式中、nは整数で、a,b,c,dは共重合体内のそれぞれのモル比であり、0であることはなく、dは、40モル%以上で60モル%以下である。)

(b) Volatile silicone

(c) Alkyl TORIMECHIKON of C6-C12 (one to 10 mass % [ as opposed to / However / the whole quantity ])

[Claim 2]

Sunscreen cosmetics according to claim 1 characterized by alkyl TORIMECHIKON of (Component c) C6-C12 being 12.5 - 40 mass % to the content of said (component b) volatility silicone.

[Claim 3]

Furthermore, water-in-oil type emulsification sunscreen cosmetics according to claim 1 or 2 characterized by containing (d) oleophilic activator and (e) water.

[Claim 4]

Furthermore, water-in-oil type emulsification sunscreen cosmetics containing (f) organic denaturation viscosity mineral according to claim 1 to 3.

[Claim 5]

(g) Sunscreen cosmetics according to claim 1 to 4 to which the loadings are characterized by being below 2 mass % to the sunscreen cosmetics whole quantity even if it is the case where do not contain substantially the nonpolar oil of a non-volatile, and/or the silicon oil of a non-volatile, or it contains.

[Claim 6]

Sunscreen cosmetics according to claim 1 to 5 characterized by the oil absorption of said hydrophobing processing zinc-oxide powder being 10-40mL / 100g.

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#### DETAILED DESCRIPTION

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[Detailed Description of the Invention]

[Field of the Invention]

[0001]

This invention relates to the sunscreen cosmetics which blended specific hydrophobing processing zinc-oxide powder. It is related with the emulsification sunscreen cosmetics which improved especially detergency in more detail, excelling in makeup rice cake.

[0002]

In addition, since the specific particle zinc-oxide powder used for this invention has the remarkable effectiveness that low oil absorption and apparent specific volume are low, as an ultraviolet scattering agent excellent in water repellence and oil repellency, it can carry out stable combination to sunscreen cosmetics, and is very useful as combination powder.

[Background of the Invention]

[0003]

Among the ultraviolet rays of sunrays, the wavelength of 280-320nm of a medium wave length ultraviolet region causes the red group called a sunburn to the skin, and when severe, it starts the same bubble as a burn. Moreover, if the wavelength of 320-400nm of a long wavelength ultraviolet region brings about the melanism of the skin and any wavelength acts repeatedly over a long period of time, promoting aging of the skin is known.

[0004]

In order to defend the bad influence to the skin by ultraviolet rays, the sunscreen cosmetics which blended an ultraviolet ray absorbent and ultraviolet-rays defense fine particles are used.

[0005]

Among these, a long wavelength ultraviolet-region field is defended effectively, and particle zinc-oxide powder is used as a material with the high transparency of a visible region. Moreover, it is known in respect of perspiration resistance

that a W/O mold emulsification constituent is good.

[0006]

When blending a particle zinc oxide with a W/O mold emulsification constituent, the viewpoint of the stability of pharmaceutical preparation to surface treatment is required for it. However, when surface treatment was uneven, zinc ion was eluted, the stability of a system might be injured, and the particle zinc oxide was powder with the stable very difficult combination to the surface treatment approach and a W/O mold emulsification constituent.

[0007]

The technique of giving sebaceous one-proof to a pigment is known by on the other hand, hydrofuge and oil-repellent processing a pigment front face in makeup cosmetics, in order to prevent messy makeup. [ give a water-repellent finish or ]For example, the technique about surface treatment is indicated by the patent reference 1-4 with the perfluoroalkyl phosphoric ester compound. Moreover, the cosmetics which blended with the patent reference 5 the fine particles by which surface coating was carried out with the acrylic-silicone system graft copolymer are indicated, and the adhesion to the skin and usability are improved.

[0008]

And the technique which carries out surface treatment of the pigment powder for cosmetics to the patent reference 6, and carries out hydrophobing to it as what improved the above-mentioned technique further with the phosphoric ester of a general formula (1) and the ester of a general formula (2) which are used for this invention is developed.

[0009]

It can be made to distribute easily in cosmetics and let the hydrophobing processing pigment shown in the patent reference 6 be the technical problem which should solve effectiveness that the use feel carried out gently is given. And the cosmetics which blended the pigment powder which many inorganic pigments, organic pigments, and resin fine-particles pigments are illustrated, and carried out hydrophobing processing of the pigment of titanium oxide, a sericite, a mica, talc, yellow oxide of iron, red ocher, and black iron oxide concretely at the example are indicated by the paragraph "0019" as various kinds of pigments for cosmetics by which surface coating is carried out.

[0010]

However, it is not suggested to the patent reference 6 at all about the new technical problem which generally makes low specific volume of the reduction in the oil absorption of the particle zinc-oxide powder which transparency is high, and no is indicated about an approach to carry out surface treatment of the particle zinc-oxide powder which is the dispersion agent of ultraviolet A, and is attained by the invention in this application, and appearance unlike pigment powder, and its remarkable effectiveness.

[0011]

On the other hand, what was excellent in makeup \*\*\*\* (water repellence and oil repellency) is demanded so that water repellence and oil repellency may be required and it is not necessary to reapply them repeatedly, since sunscreen cosmetics, such as a sun screen, are used by the pool or sea bathing. Therefore, the water-in-oil type emulsification cosmetics which blended hydrophobic powder are used as sunscreen cosmetics. The water-in-oil type emulsification cosmetics which blended hydrophobic powder are indicated by the patent reference 7-10. It is the usability which felt refreshed rather than usual oil as a technique which raises makeup rice cake, and it is used as a stock-in-trade that water-repellent effectiveness blends high oil and a high resinous principle.

However, these components remained after use and the technical problem that it will be hard coming for a shower etc. to wash occurred.

[Patent reference 1] The patent No. 2724257 official report

[Patent reference 2] The patent No. 2672913 official report

[Patent reference 3] JP,5-86984,B

[Patent reference 4] JP,3-246210,A

[Patent reference 5]JP,5-339125,A

[Patent reference 6]JP,2001-302455,A

[Patent reference 7]The patent No. 2691654 official report

[Patent reference 8]JP,11-246330,A

[Patent reference 9]JP,9-202714,A

[Patent reference 10]JP,6-321735,A

[Description of the Invention]

[Problem(s) to be Solved by the Invention]

[0012]

Artificers pay their attention to particle zinc-oxide powder useful as an ultraviolet scattering agent with high transparency in view of an above-mentioned viewpoint. The result of having studied wholeheartedly the surface treatment approach which is excellent in water repellence and oil repellency, and is easy to carry out stable combination at W/O mold emulsification mold sunscreen cosmetics, In the surface treatment approach processed simultaneously with the specific phosphoric ester indicated by the patent reference 6 and copolymer esterIf the amount of the solvent used which particle zinc-oxide powder with a mean particle diameter of 1 micrometer or less is used [ solvent ], and distributes this zinc-oxide powder is performed in the range of 30 - 90 mass % to this zinc-oxide powderIt found out that the particle zinc-oxide powder which demonstrates the remarkable effectiveness that low oil absorption and apparent specific volume are low could be manufactured.

[0013]

While this particle zinc-oxide powder has the outstanding effectiveness that low oil absorption and apparent specific volume are low, it is excellent in water repellence and oil repellency, and stable combination is possible for it to pharmaceutical preparation. It is the hydrophobing processing powder which was excellent also in the ultraviolet-rays scattering effect, of course, and is hydrophobing powder very useful to sunscreen cosmetics.

And an invention-in-this-application person etc. came to complete a header and this invention for the sunscreen cosmetics which were extremely excellent in washing ease at the makeup rice cake effectiveness and coincidence being obtained, when the particle zinc oxide powder of (a) specification obtained by doing in this way, (b) volatility silicone, and alkyl TORIMECHIKON of (c) C6-C12 were combined.

[Means for Solving the Problem]

[0014]

That is, the sunscreen cosmetics characterized by this invention containing following component (a) - (c) are offered.

(a) Distribute zinc-oxide powder in a solvent,

Phosphoric ester which has perfluoroalkyl shown by the general formula (1),

In the approach shown by the general formula (2) molecular weight performs surface treatment by the ester of what permuted a part of copolymer of the 2-ethylhexyl acrylate of 30,000-300,000, a methacrylic acid, a methyl methacrylate, and methacrylic-acid butyl, and methyl group of methyopolysiloxane by the hydroxypropyl radical, and manufactures hydrophobing processing zinc-oxide powder,

Hydrophobing processing zinc-oxide powder manufactured by using the particle zinc-oxide powder not more than 1 order particle diameter 1micrometer, and performing the amount of the solvent used in the range of the range of 50 - 90 mass % to this zinc-oxide powder.

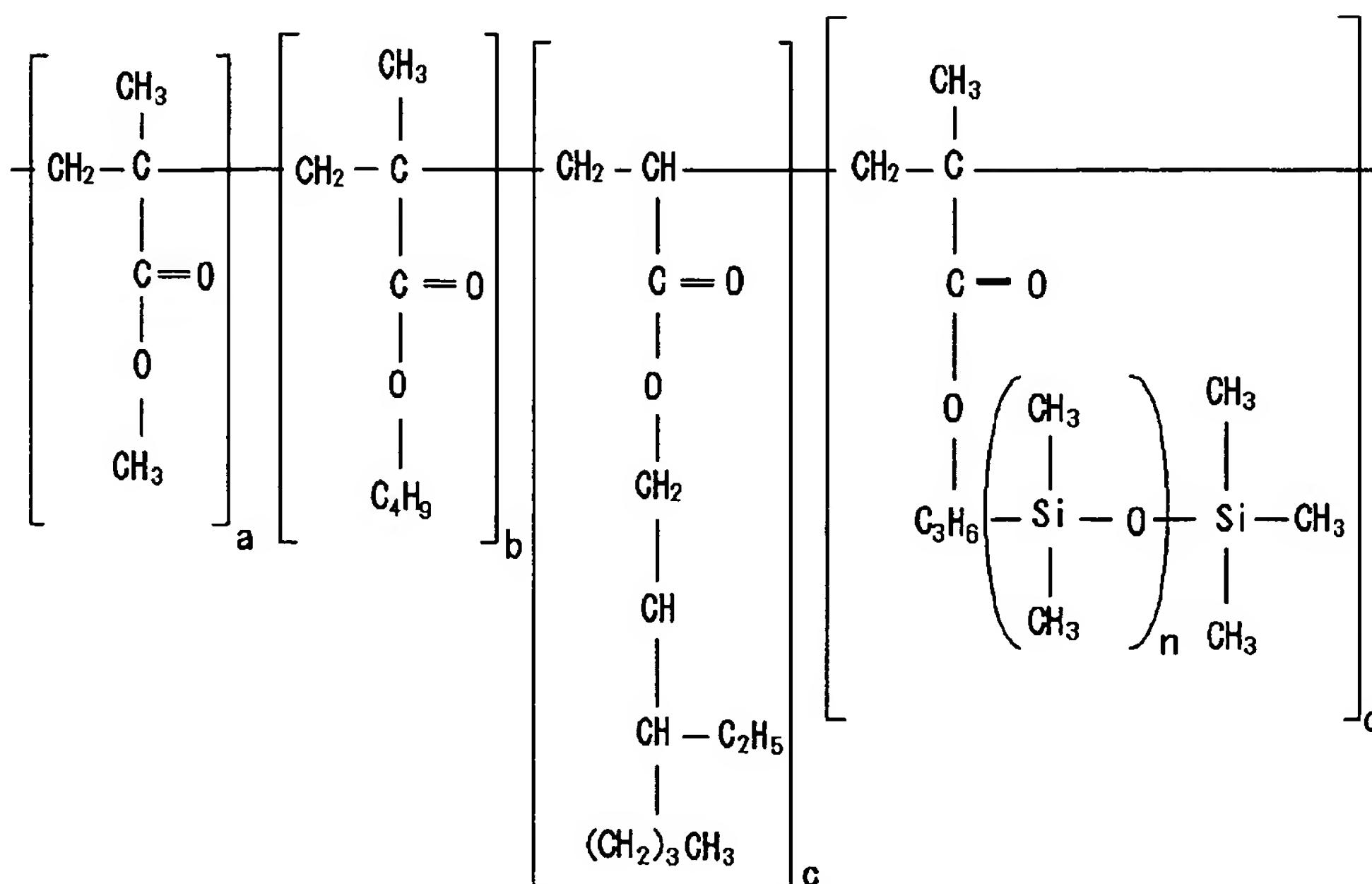
[Formula 3]



(Among a formula, the perfluoroalkyl radical or perfluoro oxy-alkyl group of carbon numbers 3-21 may be shown, and Rf may be the shape of a straight chain,

and a letter of branching, and may belong to single chain length, or may belong to compound chain length.)*n* shows the integer of 1-12 and *y* shows the number of 1-3.

[Formula 4]



(2)

(式中、*n*は整数で、*a*、*b*、*c*、*d*は共重合体内のそれぞれのモル比であり、0であることはなく、*d*は、40モル%以上で60モル%以下である。)

(b) Volatile silicone

(c) Alkyl TORIMECHIKON of C6-C12 (one to 10 mass % [ as opposed to / However / the whole quantity ])

[0015]

Moreover, this invention offers the sunscreen cosmetics according to claim 1 characterized by alkyl TORIMECHIKON of (Component c) C6-C12 being 12.5 - 40 mass % to the content of said (component b) volatility silicone.

[0016]

Furthermore, this invention offers further the above-mentioned water-in-oil type emulsification sunscreen cosmetics characterized by containing (d) oleophilic activator and (e) water.

[0017]

Moreover, this invention offers the water-in-oil type emulsification sunscreen cosmetics containing (f) organic denaturation viscosity mineral according to claim 1 to 3 further.

[0018]

Furthermore, even if it is the case where this invention does not contain substantially the nonpolar oil of the (g) non-volatile, and/or the silicon oil of a non-volatile, or it contains, the loadings offer the sunscreen cosmetics according to claim 1 to 4 characterized by being below 2 mass % to the sunscreen cosmetics whole quantity.

[0019]

Moreover, this invention offers the above-mentioned sunscreen cosmetics characterized by the oil absorption of said hydrophobing processing zinc-oxide powder being 10-40mL / 100g.

[Effect of the Invention]

[0020]

According to this invention, the sunscreen cosmetics which were extremely excellent in washing ease can be offered using the particle zinc-oxide powder which demonstrates the remarkable effectiveness that low oil absorption and apparent specific volume are low. That is, the remarkable effectiveness that it can wash easily after use is demonstrated, excelling in makeup \*\*\*\* (water repellence and oil repellency). Moreover, it is easy to apply and excels also in the feeling of use at the time of spreading.

[0021]

In addition, the particle zinc-oxide powder used for this invention is considered to be the processing fine particles condensed gently from specific surface area being comparatively high, though it is low oil absorption. Since the thing of hypoviscosity is easy to be obtained as pharmaceutical preparation and specific surface area is maintained even if this blends with the continuous phase of common W/O mold pharmaceutical preparation, it becomes possible to defend a long wavelength ultraviolet region effectively, without getting loose and carrying out a white float by the share when applying to the skin. Of course, it excels in water repellence and oil repellency, and the effectiveness that the stable combination to pharmaceutical preparation is possible is also exceptional.

[Best Mode of Carrying Out the Invention]

[0022]

Hereafter, this invention is explained in full detail.

[0023]

(a) Hydrophobing processing zinc-oxide powder

Hydrophobing processing zinc-oxide powder is manufactured in the approach indicated by the patent reference 6 instead of the cosmetics pigment by which surface treatment is carried out by carrying out surface treatment of the particle zinc-oxide powder not more than 1 order particle diameter 1micrometer. Particle zinc-oxide powder 0.1 micrometers or less is used preferably. In addition, primary particle diameter is the mean particle diameter of a primary particle.

[0024]

As a particle zinc oxide not more than 1 order particle diameter 1micrometer, FINEX-50 made from Sakai Chemistry, Sumitomo Osaka Cement 350 [ ZnO- ], zinc-oxide FZO-50 by Ishihara Sangyo Kaisha, Ltd., or the particle zinc-oxide MZ-500 grade by TAYCA CORP. can be used, for example. Moreover, particle zinc-oxide powder (what has the appearance of the shape of a petal of a carnation) given in WO 99/No. 25654 official report (Japanese Patent Application No. No. 525984 [ 11 to ]) can be used.

[0025]

Although it has the perfluoroalkyl phosphoric ester diethanolamine salt which is the solid content of the moisture powder emulsion marketed under the name of AG-530 from Asahi Glass Co., Ltd., for example as phosphoric ester which has the perfluoroalkyl radical shown by the general formula (1), or the same molecular structure as this, what removed an amine salt, ammonium salt, and an alkali-metal salt for the perfluoroalkyl phosphoric ester sodium salt with which the forms of a salt differ, perfluoroalkyl phosphoric ester potassium salt, a perfluoroalkyl ammonium phosphate salt, etc. using the acid can be used.

[0026]

As ester (an "acrylic silicone copolymerization object" may be called below) shown by the general formula (2), what dissolved KP-541, KP-543, the isopropyl alcohol marketed under the name of KP-545, butyl acetate, the copolymerization object dissolved in volatile silicone, or the acrylic silicone copolymerization object called KP-544 in other organic solvents is mentioned from Shin-Etsu Chemical Co., Ltd., for example.

[0027]

If the total amount of covering of perfluoroalkyl phosphoric ester and an acrylic silicone copolymerization object shown by the general formula (1) and (2) sets

specific surface area of particle zinc-oxide powder to  $X \text{m}^2/\text{g}$ , sufficient water repellence and oil repellency will be obtained by adjusting to  $X / 5 - X/10\%$  of the weight. If it covers with this amount out of range, oneself deposits in the shape of powder except a fine-particles front face, and the phosphoric ester of a general formula (1) comes to live together in powder, there is a possibility that it may become impossible to disregard superfluous condensation of powder, and the defense ability of a long wavelength ultraviolet region may fall, or water repellence and oil repellency may be insufficient.

Therefore, when the specific surface area of the particle zinc-oxide powder by which surface treatment is carried out is  $X (\text{m}^2/\text{g})$ , as for the sum of the amount of the phosphoric ester of a general formula (1), and the ester used of a general formula (2), it is desirable to be carried out to this zinc-oxide powder in the range of  $X/10 - X / 5$  mass %.

[0028]

Moreover, it is 2-4 that the mass ratio of the amount of the phosphoric ester of a general formula (1) and the ester used of said general formula (2) carries out by ester =1-5 of the phosphoric ester/general formula (2) of a general formula (1) desirable still more preferably. Compatibility with the cosmetics oil generally used may fall, or the water resisting property (oil repellency) when applying to the skin as pharmaceutical preparation may be insufficient for this powder obtained as it is out of range.

[0029]

By this manufacture approach, the amount of a solvent is characterized by being the range of 50 - 90 mass % to zinc-oxide powder. If surface treatment is performed according to a conventional method using the phosphoric ester of the general formula (1) of a finishing agent, and the ester of a general formula (2), the hydrophobing processing particle zinc-oxide powder low oil absorption and apparent specific volume excelled [ powder ] in the surprising thing low at water repellence and oil repellency will be manufactured. The amount of this solvent is an amount of all the solvents that exist in the system which powder distributes, and are all the solutions except a general formula (1) and the compound of (2). In addition, it is not necessary to distribute a solvent beforehand and to add powder in a processing container. The approach of adding powder first in a processing container, then adding a general formula (1) and the processing agent solution (solution) of (2), adding a solvent finally, and carrying out stirring processing is desirable.

[0030]

Solvents are organic solvents, such as ester solvents, such as lower alcohol, such as methyl alcohol, ethyl alcohol, and isopropyl alcohol, ethyl acetate, and butyl acetate, volatile silicone, and an acetone. Isopropyl alcohol (the following, IPA, and publication) is used preferably. 50-90 mass % In addition, in this invention, the solvent to be used is the total amount of solvents containing the solvent used when dissolving a finishing agent beforehand to zinc-oxide powder.

[0031]

The flow sheet of the manufacture approach of this invention is shown in "drawing 1."

(1) First add the particle zinc-oxide powder not more than 1 order particle diameter 1micrometer, the phosphoric ester of the general formula (1) of a finishing agent and the ester of a general formula (2), and a solvent in a processing container. Although especially the order of addition is not asked, it is desirable to add in order of powder, a processing agent (solution), and a solvent.

Although you may add in the condition of having melted to the solvent beforehand even if it adds as it is, as for a finishing agent, it is desirable to add in the condition of having melted to the solvent beforehand, on manufacture effectiveness.

The solvent which dissolves a finishing agent is not restricted. Usually, it is easy to treat adding in the condition of having made it dissolving in solvents,

such as isopropyl alcohol, to about 30 - 70%. As an amount of solvents furthermore applied, it is 60 to 80 mass % that the total quantity with the solvent for melting a processing agent beforehand is 50 to 90 mass % to the amount of processed powder desirable still more preferably. The rate of being covered under with 50 mass %, fully being unable to distribute and condensing powder in a solvent (imperfect surface treatment) becomes high. On the other hand, in more amount than 90 mass %, although powder is fully distributed, apparent specific volume cannot fall easily and solvent removal time amount since the covering itself is performed to the timing from which a solvent is almost removed, until it arrives at the field becomes long. That is, since it is also inefficient-like [ a solvent ] superfluously and, it is not desirable.

Especially the method of mixing powder (distribution) is performed using a usually suitable mixed (distribution) machine, for example, a rotation ball mill, an oscillating-type ball mill, a planet mold ball mill, a sand mill, attritor, a bug mill, PONIMIKISA, a planetary mixer, a stone milling machine, a Henschel mixer, a super mixer, a kneader, a medium stirrer mill (bead mill), etc., although not limited.

Although mixing time is not restricted, it is usually performed by 0.1-2h.

(2) Next, perform solvent removal. Solvent removal performs dispersion liquid, heating suitably by churning and the case. It can carry out by maintaining a reduced pressure condition with the vacuum pump equipped with the trap still more efficiently.

(3) Next, grind. Although especially the grinding approach is not limited, a high-speed tumbling mill, ball mills (a hammer mill, a cage mill, a pin mill, a disintegrator, a screen mill, a turbo mold mill, centrifugal classification mill, etc.) (a tumbling mill, a vibration ball mill, planetary mill), a stirrer mill (a tower mill, a mixing vessel mold mill, a flow conduit mold mill, ANYURAMIRU), a lab mill, a jet mill, a shear mill, a \*\*\*\*\* type grinder, a colloid mill, etc. perform it.

(4) Dry at the end.

Desiccation is performed using an electric heat type type fired dryer or the dryer performed by supplying the heated gas.

Although especially the drying time is not limited, as for 1h-250h, and drying temperature, it is desirable to carry out in 50-150 degrees C. When it carries out except [ this ], there is a possibility that sufficient desiccation may not be performed or degradation of a processing agent may take place.

#### [0032]

It has the remarkable effectiveness that low oil absorption and the apparent specific volume of the particle zinc-oxide powder obtained by the above are low.

The desirable oil absorption of the particle zinc-oxide powder used for this invention is 15-40mL / 100g.

This oil absorption is an approach according to JISK5101 21., or a numeric value measured using commercial oil absorption measuring equipment.

Moreover, the specific volume of the desirable appearance of the particle zinc-oxide powder used for this invention is 0.5 - 0.9 mL/g.

The specific volume of this appearance is a numeric value (mL/g) showing the volume per [ which is measured according to the tap method of JISK5101 20.2 publication ]g (mL).

#### [0033]

The hydrophobing powder of the (a) component used for this invention is as above-mentioned. While particle zinc-oxide powder has the outstanding effectiveness that low oil absorption and apparent specific volume are low, it excels in water repellence and oil repellency, and the stable combination to pharmaceutical preparation is possible for it, and it is excellent also in the ultraviolet-rays scattering effect.

[0034]

## &lt;Explanation of loadings&gt;

sunscreen makeup of this invention -- setting -- the hydrophobing powder of the (a) component -- desirable -- 0.1 - 60 mass % -- 1-40 mass % extent combination is carried out more preferably. Under by 0.1 mass %, if the ultraviolet-rays defense effectiveness cannot fully be acquired but it blends exceeding 60 mass % conversely, the spreading section may carry out a white float. Moreover, it may become chalky usability.

In the case of water-in-oil type emulsification cosmetics, it is desirable that 1-40 mass % combination of is done.

[0035]

## (b) Volatile silicone

The volatile silicone of the (b) component used for this invention is decamethyl cyclopentasiloxane, octamethylcyclotetrasiloxane, a dodeca methyl cyclohexa siloxane, methyl TORIMECHIKON, and a decamethyl tetra-siloxane, and independent or two sorts or more combine it according to the purpose, and it is blended.

## &lt;Explanation of loadings&gt;

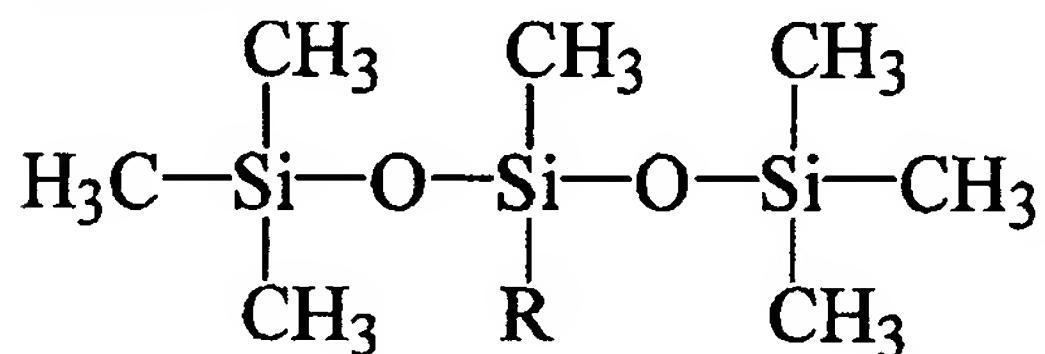
Although loadings are determined suitably, when considering as a water-in-oil type emulsification constituent, it is desirable to blend ten to 35% of the weight. The merit of volatile silicone combination called the use feel which felt refreshed since the loadings of other oil increased inevitably [ in order to obtain a stable water-in-oil type emulsification constituent less than 10% of the weight of a case ] becomes is hard to be obtained. Since the concordance under spreading will become late and a use feel will become oily if 35 % of the weight is exceeded, it is not desirable.

[0036]

## (c) Alkyl TORIMECHIKON of C6-C12 (one to 10 mass % [ as opposed to / However / the whole quantity ])

As for alkyl TORIMECHIKON of 6-12 (C6-C12), the carbon atomic number of an alkyl group used for this invention is expressed with the following general formula.

[Formula 5]



(However, R is the straight chain or branching alkyl group of carbon numbers 6-12.)

For example, KAPURIRIRUMECHIKON, RAURIRIRUMECHIKON, etc. are raised.

As a commercial item, they are SS-3408 (Nippon Unicar, Inc. make) and SILCARE. 41M10 (product made from Clariant) are raised.

## &lt;Explanation of loadings&gt;

As for loadings, it is desirable to blend one to 10% of the weight to the sunscreen cosmetics whole quantity. Even if the effectiveness of washing ease is not acquired as they are less than 1% of the weight of loadings, but it blends exceeding 10 % of the weight, a difference is not accepted in the washing ease effectiveness, but it is uneconomical.

In this invention, in order to acquire a good spreading feel, having washing ease, it is desirable that alkyl TORIMECHIKON of (Component c) C6-C12 is 12.5 - 40 mass % to the content of said (component b) volatility silicone.

Under by 12.5 mass %, when powdered jarring may be sensed at the time of spreading and it blends exceeding 40 mass %, there is an inclination for the concordance to the skin of cosmetics to worsen.

[0037]

By blending (d) oleophilic activator further and considering as water-in-oil type emulsification sunscreen cosmetics, the sunscreen cosmetics of this invention have good elongation, and it can make them the sunscreen cosmetics of the clean usability.

(d) Although it will not be limited as an oleophilic activator if usually used for cosmetics, polyoxyalkylene denaturation organopolysiloxane is used preferably. As polyoxyalkylene denaturation organopolysiloxane, it may be the thing of a straight chain mold, or you may be a branch-type thing, and silicone KF-6017 and silicone KF-6028 (Shin-Etsu Chemical Co., Ltd. make) are raised as a commercial item.

<Explanation of loadings>

0.5 - 4 mass % of loadings is desirable to the sunscreen cosmetics whole quantity. Below by 0.5 mass %, when it considers as water-in-oil type emulsification cosmetics, emulsion stability may worsen. Moreover, even if it blends more than 4 mass %, the further improvement in emulsion stability is not obtained, but becomes the cause which the stimulus to the skin and stickiness produce on the contrary.

[0038]

(e) Water

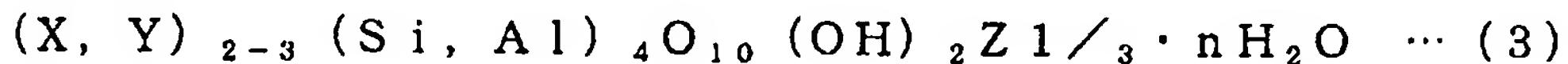
When carrying out the water-in-oil type emulsification sunscreen cosmetics of the sunscreen cosmetics of this invention and using them, water is suitably blended in the 1 - 60 mass % range.

[0039]

When the water-in-oil type emulsification sunscreen cosmetics of this invention blend (f) organic denaturation viscosity mineral further, stability is raised, and the elongation at the time of spreading is good, and can give a fresh feeling of use.

(f) organic denaturation clay mineral blended with this invention is used as an emulsification assistant, and is a thing. This organic denaturation clay mineral is a kind of colloid nature hydrated Al silicates which has 3 layer structure, and denaturalizes the clay mineral generally expressed with the following general formula (3) with a quarternary-ammonium-salt mold cationic surface active agent.

[Formula 6]

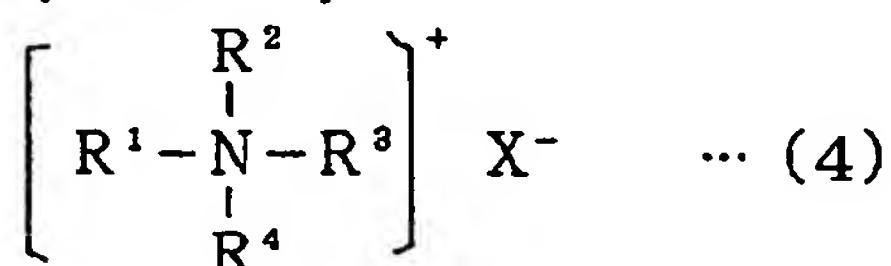


(However, X=aluminum, Fe (III), Mn (III) and Cr (III), Y=Mg, Fe (II), nickel, Zn and Li, Z=K, Na, calcium)

clay minerals, such as synthetic mica (a commercial item -- DAIMO night: -- there is Topy Industries, Ltd.) specifically known in the name of the montmorillonite group (there are veegum, KUNIPIA, RAPONAITO, etc. in a commercial item.) and sodium silicic mica of nature, such as a montmorillonite, saponite, and hectorite, or composition (that by which the (OH) radical in a formula was permuted with the fluorine in this case), sodium, or a lithium TENIO light, are processed with a quarternary-ammonium-salt mold cationic surface active agent, and it is obtained.

The quarternary-ammonium-salt mold cationic surface active agent used here is expressed with the following general formula (4).

[Formula 7]



(Among a formula, in R1, a methyl group or the alkyl group of carbon numbers 10-22, and R3 and R4 express the alkyl group or hydroxyalkyl radical of carbon numbers 1-3, and, as for X, the alkyl group of carbon numbers 10-22 or benzyl, and R2 express a halogen atom or methyl sulfate residue.)

As this quaternary-ammonium-salt mold cationic surface active agentFor example, dodecyl trimethylammonium chloride, MIRISU chill trimethylammonium chloride, Cetyl trimethylammonium chloride, stearyl trimethylammonium chloride, ARAKIRU trimethylammonium chloride, behenyl trimethylammonium chloride, Milli SUCHIRUJI methylethyl ammonium chloride, cetyltrimethyl ethylammonium chloride, Stearyl dimethyl ethylammonium chloride, ARAKIRU dimethyl ethylammonium chloride, Behenyl dimethyl ethylammonium chloride, MIRISUCHIRU diethyl methylammonium chloride, Cetyl diethyl methylammonium chloride, stearyl diethyl methylammonium chloride, ARAKIRU diethyl methylammonium chloride, behenyl diethyl methylammonium chloride, Benzyl dimethyl MIRISUCHIRU ammonium chloride, benzyl dimethyl cetyl ammonium chloride, Benzyl dimethyl stearyl ammonium chloride, benzyl dimethyl behenyl ammonium chloride, Benzyl methylethyl cetyl ammonium chloride, benzyl methylethyl stearyl ammonium chloride, Dibehenyl dihydroxyethyl ammonium chloride, corresponding bromide, etc. are further mentioned for dipalmityl propylethylammonium methylsulfate etc. In operation of this invention, a kind or two sorts or more are chosen as arbitration among these.

As a typical thing of an organic denaturation clay mineral, dimethyl alkylammonium hectorite, BENJIRUJIMECHIRU stearyl ammonium hectorite, the chlorination distearyldimethylbenzylammonium processing magnesium aluminum silicate, etc. are mentioned. As a commercial item, Benton 27 (benzyl dimethyl stearyl ammoniumchloride processing hectorite: the National red company make) and Benton 38 (distearyldimethyl-ammonium-chloride processing hectorite: the National red company make) are desirable.

[0040]

In this invention, even if it is the case where do not contain substantially the nonpolar oil of the (g) non-volatile, and/or the silicon oil of a non-volatile, or it contains, it is desirable that the loadings are below 2 mass % to the sunscreen cosmetics whole quantity. (g) If washing becomes easy and blends exceeding 2 mass % so that there are few loadings of the nonpolar oil of a non-volatile and/or the silicon oil of a non-volatile, by the usual washing, the inclination which remains to the skin will become high that it is hard to wash.

As a nonpolar oil of a non-volatile, hydrocarbon system oil, such as squalane, a liquid paraffin, flow isoparaffin, and heavy flow isoparaffin, is raised, for example.

As silicon oil of a non-volatile, chain-like polysiloxanes, such as dimethylpolysiloxane, methyopolysiloxane, and methyl hydrogen polysiloxane, a polyether, a fatty-acid denaturation polysiloxane, a higher-alcohol denaturation polysiloxane, an amino acid denaturation polysiloxane, etc. are raised, for example.

[0041]

The gestalt of the sunscreen cosmetics of the invention in this application cannot be asked, for example, can be made into oily cosmetics, oily solid cosmetics, and water-in-oil type emulsification cosmetics. It is desirable to consider as water-in-oil type emulsification cosmetics from the point of usability.

[Example]

[0042]

An example explains this invention concretely. The technical range of this invention is not limited at all by these examples. In addition, unless it mentions specially about loadings, mass % shows.

[0043]

## (a) Hydrophobing processing zinc-oxide powder

"The example 1 of manufacture"

The perfluoroalkyl phosphoric ester ( $R_f$ : a carbon number 10,  $n=2$ ,  $1 \leq y \leq 2$ ) of the general formula (1) of a carbon number 12 300g, and the ester (acrylic silicone copolymer: -- KP[ by Shin-Etsu Chemical Co., Ltd. ]-544: -- it is shown by the general formula (2) --) of a general formula (2) Molecular weight The 2-ethylhexyl acrylate of 30,000-300,000, Ester 100g of what permuted a part of copolymer of a methacrylic acid, a methyl methacrylate, and methacrylic-acid butyl and methyl group of methyopolysiloxane by the hydroxypropyl radical, and 3.5kg (solvent) of IPA were prepared. The 50 mass % solution of the phosphoric ester of the above-mentioned general formula (1) and the 60 mass % solution of the ester of the above-mentioned general formula (2) were prepared using these.

5kg (the thing, (specific-surface-area  $X$ ) = $60\text{m}^2/\text{g}$  which have the appearance of the shape of a petal of a carnation) of particle zinc-oxide powder given in WO 99/No. 25654 official report (Japanese Patent Application No. No. 525984 [ 11 to ]) is put into the high-speed churning mixer of 20L, and it is solution ON \*\*\*\* of the solution of the phosphoric ester of the above-mentioned general formula (1), and the ester of the above-mentioned general formula (2). Further remaining IPA was put in and the total amount of IPA used as the total amount of solvents was set to 3.5kg. Then, after agitating at 60 degrees C for 1 hour, it warmed at 120 degrees C, the inside of a high-speed churning mixer was made reduced pressure, it maintained for about 2 hours, and IPA which is a solvent was removed completely.

[0044]

Next, after paying out of the inside of a mixer, the carbon number obtained 6% of perfluoroalkyl phosphoric ester of 12, and the particle zinc oxide which carried out surface coating with 2% of acrylic silicone copolymers by the hammer mill equipped with 2mm screen grinding, and heating 24h at 130 degrees C.

[0045]

Powdered oil absorption was 30.8mL / 100g, as a result of measuring according to the approach of JISK5101, using silicon oil as oil. The specific volume of powdered appearance was 0.71 mL/g as a result of measuring according to the tap method of JISK5101 20.2 publication. The powdered contact angle was 52 degrees as a result of measuring the contact angle which produces a pellet for powder using a tablet briquetting machine etc., trickles a liquid paraffin and is formed on this.

The amount of the solvent used in the manufacture approach of the example 1 of manufacture is 70 mass % to this zinc-oxide powder.

Moreover, the sum of the amount of the phosphoric ester of a general formula (1) and the ester used of a general formula (2) is 8%, and is ester =3 of the phosphoric ester/general formula (2) of a general formula (1).

[0046]

"The examples 2-10 of manufacture, the examples 1-3 of comparison manufacture"

It manufactured like the example 1 of manufacture. The "Table 1" of the below-mentioned manufacture formula is followed. Namely, particle zinc-oxide powder, The perfluoroalkyl phosphoric ester of the general formula (1) of a carbon number 12 ( $R_f$ : a carbon number 10,  $n=2$ ,  $1 \leq y \leq 2$ ), and the ester (acrylic silicone copolymer: -- KP[ by Shin-Etsu Chemical Co., Ltd. ]-544: -- it is shown by the general formula (2) --) of a general formula (2) Molecular weight The 2-ethylhexyl acrylate of 30,000-300,000, A methacrylic acid, a methyl methacrylate, the ester of what permuted a part of copolymer of methacrylic-acid butyl and methyl group of methyopolysiloxane by the hydroxypropyl radical, and IPA (solvent) were prepared.

5kg of particle zinc-oxide powder was put into the high-speed churning mixer of 20L, and the 50 mass % solution of the phosphoric ester of the above-mentioned general formula (1) and the 60 mass % solution of the ester of the

above-mentioned general formula (2) which were beforehand dissolved in IPA next were put in. IPA was added in order to adjust the total amount of IPA which furthermore turns into the total amount of solvents. Then, after agitating at 60 degrees C for 1 hour, it warmed at 120 degrees C, the inside of a high-speed churning mixer was made reduced pressure, it maintained for about 2 hours, IPA which is a solvent was removed completely, and the surface coating particle zinc oxide was obtained.

Moreover, the contact angle over the oil absorption of the obtained powder, apparent specific volume, and a liquid paraffin was measured like the example 1 of manufacture.

[0047]

It is as follows when the example of manufacture and the example of comparison manufacture are summarized in "Table 1 and 2".

[Table 1]

	微粒子 酸化亜鉛	X m <sup>2</sup> /g	一般式 (1) g	一般式 (2) g	(1)/(2) 比	処理剤合計 /粉末 質量%	IPA全量 kg	溶媒量 /粉末 質量%
製造例1	花びら状 *1)	60	300	100	3	8	3.5	70
製造例2	FINEX-50 *2)	50	300	100	3	8	3.5	70
製造例3	花びら状 *1)	60	300	100	3	8	2.5	50
製造例4	花びら状 *1)	60	300	100	3	8	4.5	90
製造例5	花びら状 *1)	60	375	125	3	10	3.5	70
製造例6	花びら状 *1)	60	200	200	1	8	3.5	70
製造例7	花びら状 *1)	60	334	66	5	10	3.5	70
比較製造例1	花びら状 *1)	60	300	100	3	8	2.0	40
製造例8	花びら状 *1)	60	150	300	0.33	8	3.5	70
比較製造例2	花びら状 *1)	60	300	100	3	8	5.0	100
製造例9	花びら状 *1)	60	600	200	3	16	3.5	70
製造例10	花びら状 *1)	60	350	50	7	8	3.5	70
比較製造例3	花びら状 *1)	60	400	0	∞	8	3.5	70

\*1) Particle zinc-oxide powder given in WO 99/No. 25654 official report (Japanese Patent Application No. No. 525984 [ 11 to ]) (the thing, (specific-surface-area X) =60m<sup>2</sup>/g which have the appearance of the shape of a petal of a carnation)

\*2) Particle zinc-oxide FINEX-50 (the Sakai chemistry company make, (specific-surface-area X) =50m<sup>2</sup>/g)

[Table 2]

	吸油量 mL/100g	比容積 mL/g	接触角 deg.
製造例1	30.8	0.71	52
製造例2	35.8	0.60	55
製造例3	36.7	0.84	51
製造例4	19.9	0.52	53
製造例5	18.4	0.56	57
製造例6	22.0	0.59	38
製造例7	27.1	0.63	59
比較製造例1	57.1	1.57	56
製造例8	12.2	0.43	26
比較製造例2	23.5	0.97	55
製造例9	13.6	0.45	56
製造例10	36.5	1.13	62
比較製造例3	33.5	0.95	91

[0048]

Moreover, if the value of the amount [ as opposed to the amount of powder for the above surface treatment conditions ] of the solvent used, the oil absorption to the parameter of the ratio of the ester of the phosphoric ester/general formula (2) of a general formula (1), and apparent specific volume is shown in a graph, it will become like "drawing 2", "drawing 3", and "drawing 4."

[0049]

It can be made very easy to blend with cosmetics, especially the cosmetics characterized by distributing to oil by controlling the amount of solvents to the amount of powder, and controlling apparent specific volume and oil absorption moderately from these drawings, (distribution). Moreover, since the oil repellency which contributes to the improvement in makeup \*\*\*\* (water repellence and oil repellency) has relation as well as influencing specific volume and oil absorption, the ratio and amount of a processing agent are compatible by choosing these conditions in the function as the formula width of face (improvement in compatibility with the powder and the existing raw material which were covered especially with the fluorine compound) and cosmetics at the time of cosmetics preparation. Therefore, it turns out that (a) hydrophobing processing zinc-oxide powder used for this invention is hydrophobing processing powder very useful to sunscreen cosmetics.

[0050]

Next, the example of the sunscreen cosmetics of this invention is explained. The water-in-oil type emulsification cosmetics of a formula of Table 3 were manufactured with the conventional method, and the following estimated the effectiveness.

[0051]

<Evaluation of the makeup rice cake (water repellence and oil repellency) effectiveness>

I had you actually use it for ten persons' special panel, and the following criteria estimated the makeup rice cake effectiveness.

O : 7-10 persons answered that makeup rice cake (water repellence and oil repellency) was good.

O : 4-6 persons answered that makeup \*\*\*\* (water repellence and oil repellency) was good.

\*\*: The 2-3 person answered if makeup rice cake (water repellence and oil repellency) is good.

x: The 0-1 person answered that makeup rice cake (water repellence and oil repellency) was good.

[0052]

## &lt;Evaluation of washing ease&gt;

I had you actually use it for ten persons' special panel, and the following criteria estimated washing ease (the ease of falling).

O : it was answered that it was easy to wash 7-10 persons.

O : it was answered that it was easy to wash 4-6 persons.

\*\*: It was answered that it was easy to wash 2-3 person.

x: It was answered that it was easy to wash 0-1 person.

[0053]

[Table 3]

	実施例1	実施例2	比較例1	比較例2	比較例3
(e) イオン交換水	30.2	—	30.2	30.2	20.2
1, 3-ブチレングリコール	5	—	5	5	5
(b) オクタメチルシクロテトラシロキサン	28	47.5	28	28	28
(c) カプリリルメチコンジメチルシリコーン (6 cs)	5	15	—	5	—
(d) 分岐型ポリエーテル変性シリコーン (信越化学社製KF-6028)	1	—	1	1	1
(d) ポリエーテル変性シリコーン (信越化学社製KF-6017)	—	—	—	—	—
(a) 硫水化処理酸化亜鉛粉末 (製造例1) 5%メチルハイドロジェン処理酸化亜鉛 (FINEX-50、堺化学社製)	18	25	—	—	—
球状PMMA (マイクロスフェア-M306)	5	5	5	5	5
オクチルメトキシシンナメート	7.5	7.5	7.5	7.5	7.5
エデト酸塩	0.1	—	0.1	0.1	0.1
フェノキシエタノール	0.2	—	0.2	0.2	0.2
化粧持ち (撥水性・撥油性)	◎	○	○	○	○
洗净容易性	◎	○	×	△	△

It turns out that the examples 1 and 2 which are the sunscreen cosmetics of this invention are excellent in washing ease with makeup \*\*\*\* (water repellence and oil repellency). (a) The example 1 of a comparison which does not blend KAPURIRIRUMECHIKON is remarkably inferior in washing ease.

Moreover, the same effectiveness is acquired also when (a) hydrophobing processing zinc-oxide powder of the examples 2-10 of manufacture is blended.

In addition, (a) particle zinc-oxide powder used for this invention is considered to be the processing fine particles condensed gently from specific surface area being comparatively high, though it is low oil absorption. Since the thing of hypoviscosity is easy to be obtained as pharmaceutical preparation and specific surface area is maintained even if this blends with the continuous phase of common W/O mold pharmaceutical preparation, it becomes possible to defend a long wavelength ultraviolet region effectively, without getting loose and carrying out a white float by the share when applying to the skin. Of course, it excels in water repellence and oil repellency, and the effectiveness that the stable combination to pharmaceutical preparation is possible is also exceptional. If the hydrophobing processing zinc-oxide powder of the example of comparison manufacture is blended instead of the example of manufacture, since low oil absorption and apparent specific volume are low, the above-mentioned effectiveness will not fully be demonstrated.

[0054]

[Table 4]

	実施例3	実施例4	実施例5	実施例6	実施例7
(e) イオン交換水	31.2	35.2	31.2	30.7	30.7
1, 3-ブチレングリコール	5	5	5	5	5
(b) オクタメチルシクロテトラシロキサン	28	19.5	25	25	24
(c) カプリリルメチコン ジメチルシリコーン (6 cs)	3	8	6	6	6
(d) 分岐型ポリエーテル変性シリコーン (信越化学社製KF-6028)	1.5	1.5	—	1.5	1.5
(d) ポリエーテル変性シリコーン (信越化学社製KF-6017)	—	—	2	—	—
(a) 疎水化処理酸化亜鉛粉末 (製造例1) 5%メチルハイドロジェン処理酸化亜鉛 (FINEX-50、堺化学社製)	18	18	18	18	18
球状PMMA (マイクロスフェア-M306)	5	5	5	5	5
オクチルメトキシシンナメート	7.5	7.5	7.5	7.5	7.5
エデト酸塩	0.1	0.1	0.1	0.1	0.1
フェノキシエタノール	0.2	0.2	0.2	0.2	0.2
化粧持ち (撥水性・撥油性)	○	◎	◎	◎	◎
洗浄容易性	◎	◎	◎	◎	○

About the sunscreen of the above-mentioned examples 3-7, each had good makeup rice cake (water repellence and oil repellency) and washing ease. In the example 3 whose content of (c) to (b) is 11 mass %, the feeling of jarring of some powder was sensed at the time of spreading, and the concordance to the skin was somewhat inferior at the time of spreading about the example 4 whose content total amount of (c) to (b) is 41 mass %.

[0055]

The example of other this inventions is given to below. All are makeup \*\*\*\* (water repellence and oil repellency) and sunscreen cosmetics excellent in washing ease.

[0056]

Example 8: W/O mold emulsification sun-block cream  
 Dimethylpolysiloxane 0.5  
 Decamethyl cyclopentasiloxane 28  
 RAURIRIRUMECHIKON 6  
 Trimethylsiloxy silicic acid 0.5  
 Polyether denaturation silicone 3  
 (KF[ by the Shin-etsu chemistry company ]- 6017)  
 Dipropylene glycol 5  
 Zinc oxide obtained in the example 2 of manufacture 18  
 Paraben Optimum dose  
 Phenoxyethanol Optimum dose  
 Eddate trisodium Optimum dose  
 PARAMETOKISHI cinnamic acid 2-ethylhexyl 7.5  
 Dimethyl distearyl ammonium hectorite 1  
 Spherical PMMA powder 4  
 Purified water Remainder  
 Perfume Optimum dose

[0057]

Example 9: W/O mold emulsification sun-block cream  
 HEKISHIRIRUMECHIKON 5  
 Decamethyl cyclopentasiloxane 25  
 Methyl TORIMECHIKON 5  
 Branch-type polyether denaturation silicone 3  
 (KF[ by the Shin-etsu chemistry company ]- 6028)

1, 3-butylene glycol 5  
 Particle titanium oxide (MT[ by TAYCA CORP. ]-100TV) 5  
 Zinc oxide obtained in the example 3 of manufacture 12  
 Paraben Optimum dose  
 Phenoxyethanol Optimum dose  
 Edetate trisodium Optimum dose  
 Dimethyl distearyl ammonium hectorite 1  
 Spherical poly methyl silsesquioxane powder 5  
 Purified water Remainder  
 Perfume Optimum dose  
 [0058]  
 Example 10: It is the \*\* milky lotion in the daytime [ bilayer mold W/O ].

KAPURIRIRUMECHIKON 7  
 Decamethyl cyclopentasiloxane 15  
 Decamethyl tetra-siloxane 13  
 Branch-type polyether denaturation silicone 1.5  
 (KF[ by the Shin-etsu chemistry company ]- 6028)  
 1, 3-butylene glycol 5  
 Squalane 0.5  
 Talc 1  
 Dipotassium glycyrrhizinate 0.1  
 Tocopherol acetate 0.1  
 Edetate trisodium 0.05  
 PARAMETOKISHI cinnamic acid 2-ethylhexyl 5  
 Zinc oxide obtained in the example 4 of manufacture 10  
 Dimethyl distearyl ammonium hectorite 0.5  
 The end of spherical polyethylene 3  
 Phenoxyethanol Optimum dose  
 Ethanol 5  
 Purified water Remainder  
 Perfume Optimum dose  
 [Availability on industry]  
 [0059]

According to this invention, it excels in water repellence and oil repellency, the canal compound processing particle zinc-oxide powder which has the special feature that oil absorption and apparent specific volume are low is blended, and makeup \*\*\*\* (water repellence and oil repellency) and sunscreen cosmetics excellent in washing ease can be offered.

[Brief Description of the Drawings]

[0060]

[Drawing 1] It is the explanatory view having shown process drawing of the manufacture approach of this invention.

[Drawing 2] It is the graph of oil absorption and the value of apparent specific volume to the amount of the solvent used to the amount of powder.

[Drawing 3] It is the graph of the value of the amount of the solvent used to the amount of powder, the oil absorption to the parameter of the ratio of the ester of the phosphoric ester/general formula (2) of a general formula (1), and apparent specific volume.

[Drawing 4] It is the graph of the contact angle (opposite liquid paraffin) over the parameter of the ratio of the ester of the phosphoric ester/general formula (2) of a general formula (1).

#### DESCRIPTION OF DRAWINGS

[Brief Description of the Drawings]  
 [0060]

[Drawing 1] It is the explanatory view having shown process drawing of the manufacture approach of this invention.

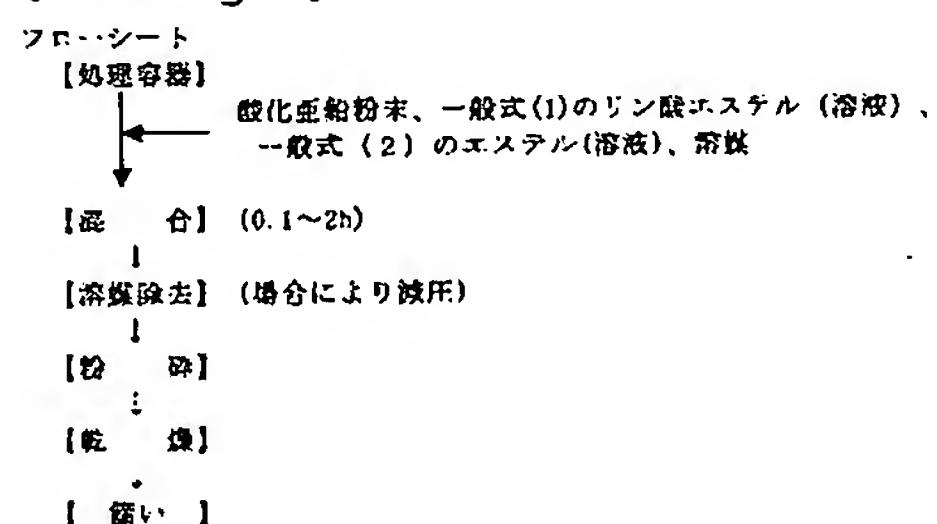
[Drawing 2] It is the graph of oil absorption and the value of apparent specific volume to the amount of the solvent used to the amount of powder.

[Drawing 3] It is the graph of the value of the amount of the solvent used to the amount of powder, the oil absorption to the parameter of the ratio of the ester of the phosphoric ester/general formula (2) of a general formula (1), and apparent specific volume.

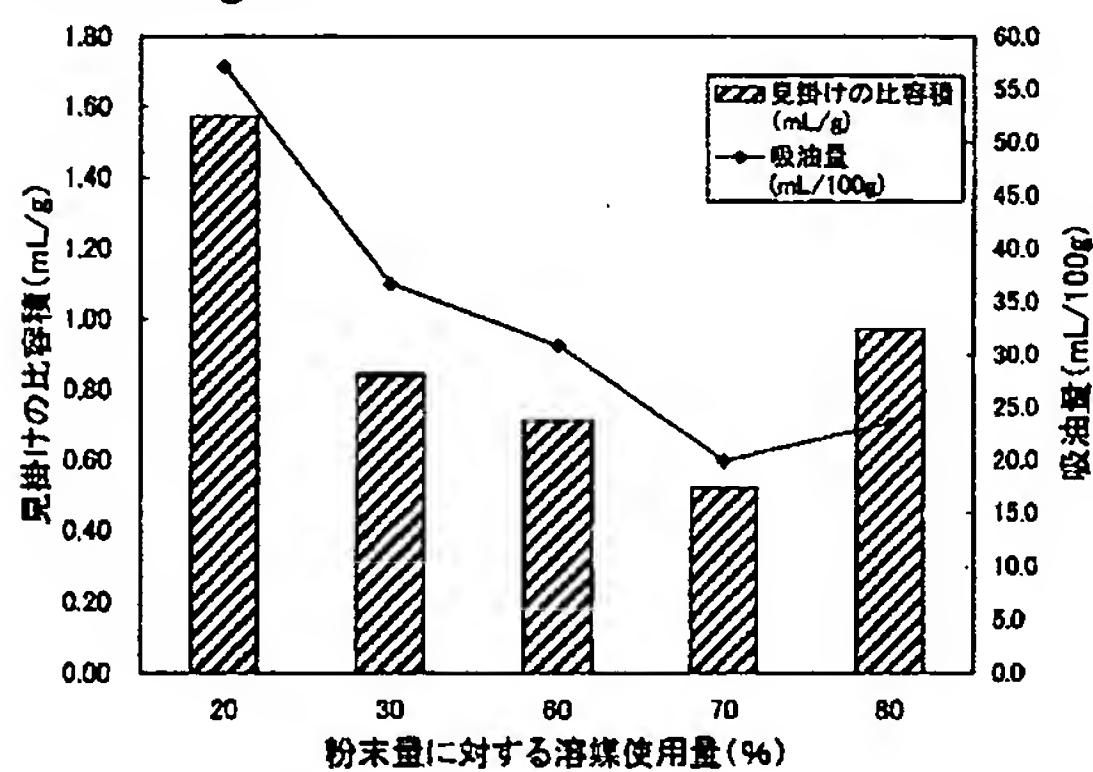
[Drawing 4] It is the graph of the contact angle (opposite liquid paraffin) over the parameter of the ratio of the ester of the phosphoric ester/general formula (2) of a general formula (1).

## DRAWINGS

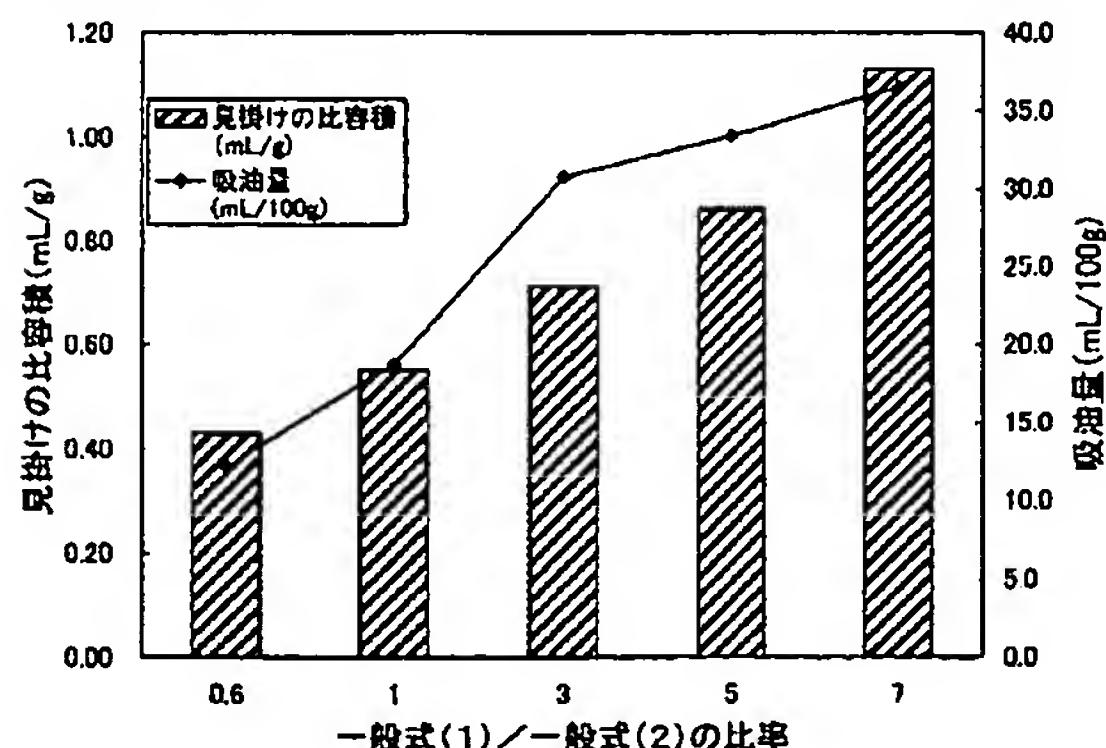
[Drawing 1]



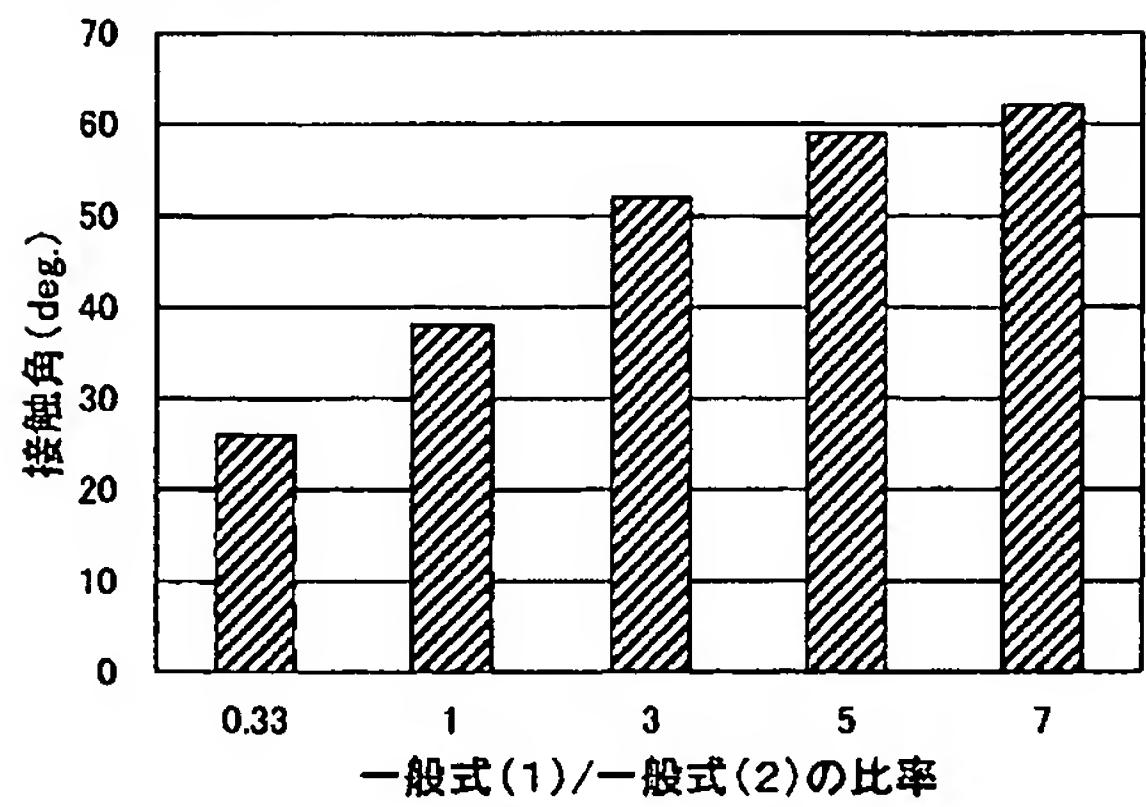
[Drawing 2]



[Drawing 3]



[Drawing 4]





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(71) Anmelder:  
Beiersdorf AG, 20253 Hamburg, DE

(72) Erfinder:  
Lanzendorfer, Ghita, Dr., 22087 Hamburg, DE;  
Stelling, Jessica, 22143 Hamburg, DE

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Die folgenden Angaben sind den vom Anmelder eingereichten Unterlagen entnommen  
Rechercheantrag gemäß § 43 Abs. 1 Satz 1 PatG ist gestellt.

(54) Bezeichnung: Dekorative Kosmetikprodukte mit Effektpigmenten

(57) Zusammenfassung: Kosmetische und/oder dermatologische Zubereitung, enthaltend teilweise vernetzte elastomere feste Organopolysiloxane, Pigmente und flüchtige Lipide, dadurch gekennzeichnet, daß die Pigmente Interferenzpigmente sind.

**Beschreibung**

[0001] Die vorliegende Erfindung betrifft dekorative kosmetische und/oder dermatologische Zubereitungen, die Interferenzpigmente und/oder Perlglanzpigmente, die im folgenden unter Effektpigmente zusammengefasst werden, enthalten.

**Stand der Technik**

[0002] Effektpigmente bestehen aus plättchenförmigen Substraten, die mindestens eine Schicht eines optisch dichten Mediums besitzen, welche einen Teil der einfallenden Strahlung reflektieren, andere Teile transmittieren. Die an den Grenzflächen der Medien reflektierten Lichtwellen können interferieren: Sie löschen sich gegenseitig aus oder sie verstärken sich und erzeugen so ein schillerndes Farbenspiel oder winkelabhängige Farbänderungen.

[0003] Solche Farbeffekte sind bekannt aus der Natur, treten beispielsweise bei Perlmutt, Fischschuppen oder Perlen auf. Bei der Perle oder dem Perlmutt von Muscheln sind es die hauchdünnen, abwechselnden Schichten aus Kalk und Eiweiß, die den typischen Perlglanz durch die Mehrfachreflektion an den verschiedenen tief liegenden Schichten der Perle entstehen lassen. Bei auftreffenden Lichtstrahlen wirken die Calciumcarbonatschichten wie dünne, transparente Spiegel; sie reflektieren einen Teil des Lichtes, lassen jedoch einen Großteil passieren. Nach dem Durchdringen der Proteinschicht, trifft der Lichtstrahl dann auf die nächste Calciumcarbonatschicht und wird dort erneut geteilt: so entsteht nach dem Durchdringen des Lichtes vieler Grenzschichten der charakteristische Glanz von Perlen.

[0004] Interferenzpigmente können auch synthetisch hergestellt werden. Ihr Trägermaterial besteht klassisch aus Glimmer oder aus synthetischen Trägermaterialien wie z.B. Aluminiumoxid, Eisenoxiden, Siliziumdioxid oder Magnesiumfluorid. Letztere lassen sich in gleich bleibend hoher Qualität herstellen. Ihre Partikel zeichnen sich durch eine exakt definierte Geometrie, insbesondere Schichtdicke aus. Beschichtungen der Oberfläche dieser Plättchen mit Titandioxid oder anderen Metalloxiden mit höherem Brechungsindex als das Substrat steuern so den optischen Effekt der Pigmente. Sie eröffnen damit ein großes Spektrum neuer farblicher Gestaltungsmöglichkeiten. Zum Beispiel können Farben "floppen", das bedeutet, der Farbeindruck hängt von Blickwinkel des Betrachters ab: von oben gesehen erscheint eine Fläche grün, die seitlich betrachtet goldfarben wirkt. Solche Pigmente werden beispielsweise für Fahrzeug- und Gebrauchsgüterlackierungen eingesetzt.

[0005] Für die Interferenz-Farbe der Pigmente sind sowohl die Schichtdicke, der optisch dichten Substanz als auch die Anzahl der aufgebrachten Schichten verantwortlich.

[0006] Eine anderer Weg zur Beschichtung von Glimmer- und Aluminiumplättchen besteht in der Anwendung eines CVD Prozesses, durch den Eisenoxid aufgebracht werden kann. Speziell im Rot- und Goldbereich zeigen diese Pigmente interessante Farbeindrücke und mit Aluminium als Träger bieten sie hohes Deckvermögen.

[0007] Für kosmetische Anwendungen bisher zugelassene Interferenzpigmente basieren auf Aluminium-, den verschiedenen Oxidationsstufen des Eisen, Siliziumdioxid-, Glimmer,  $\text{Al}_2\text{O}_3$ - und Natrium-Calcium-Borosilikat-Trägern. Diese können auf verschiedene Weise mit  $\text{Fe}_2\text{O}_3$ , Titandioxid (Anatas und Rutil), Karmin, Berliner Blau, Siliziumdioxid, Zinndioxid, Silber beschichtet sein. Auch mehrfach beschichtete Pigmente kommen zum Einsatz. Im folgenden werden Beispiele genannt, jedoch ohne limitierend zu sein:

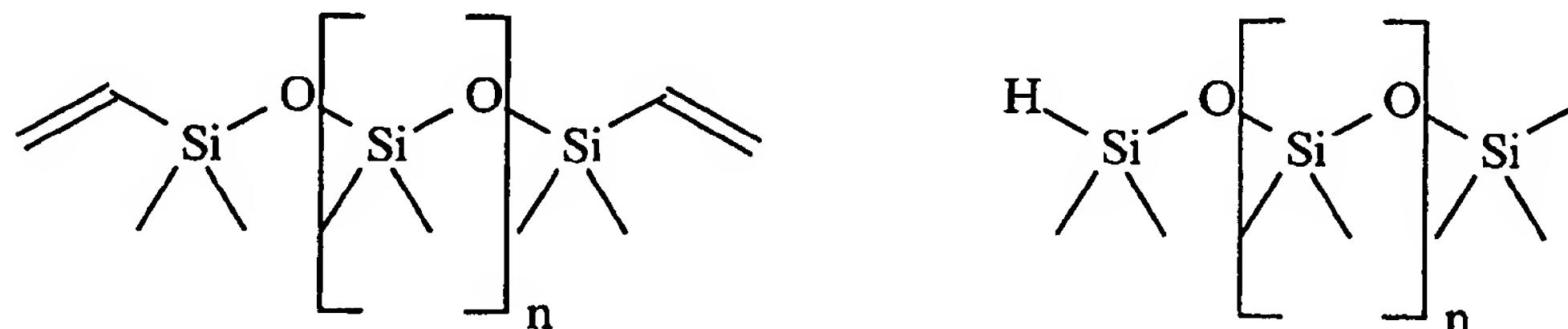
- $\text{Al}/\text{SiO}_2/\text{Al}/\text{SiO}_2/\text{Al}$
- $\text{Cr}/\text{MgF}_2/\text{Al}/\text{MgF}_2/\text{Al}$
- $\text{MoS}_2/\text{SiO}_2/\text{Al}/\text{SiO}_2/\text{MoS}_2$
- $\text{Fe}_2\text{O}_3/\text{SiO}_2/\text{Al}/\text{SiO}_2/\text{Fe}_2\text{O}_3$
- $\text{Fe}_2\text{O}_3/\text{SiO}_2/\text{Al}/\text{SiO}_2/\text{Fe}_2\text{O}_3$
- $\text{Fe}_2\text{O}_3/\text{SiO}_2/\text{Fe}_2\text{O}_3/\text{SiO}_2/\text{Fe}_2\text{O}_3$
- $\text{MoS}_2/\text{SiO}_2/\text{Mica-Oxid}/\text{SiO}_2/\text{MoS}_2$
- $\text{Fe}_2\text{O}_3/\text{SiO}_2/\text{Mica-Oxid}/\text{SiO}_2/\text{Fe}_2\text{O}_3$

[0008] Allerdings ist es keineswegs einfach, diese geometrisch anspruchsvollen und ungewöhnlichen Pigmente in kosmetische Zubereitungen einzuarbeiten. Da der Erhalt Ihrer Geometrie, sowie der/den empfindliche(n) Beschichtungen) aber zur Erreichung der gewünschten optischen Wirkung unbedingt erforderlich ist, darf diese durch den Formulierungsprozess keinen Schaden nehmen. Zur Formulierung kosmetischer Zubereitungen werden nämlich zum Mischen und auch zur Erreichung einer homogenen Zubereitung Verfahrensschritte durchlaufen, die die empfindlichen Interferenzpigmenten einem hohen Maß an mechanischem Stress aussetzen. Im Besonderen fordern die weit verbreiteten Formulierungen auf Emulsionsbasis eine gute Homogenisierung, insbesondere dann, wenn große Mengen an Pigmenten zugegen sind wie in dekorativen Produkten. Je höher nämlich der Pigmentanteil ist, desto schwieriger ist es, stabile Formulierungen zu erhalten.

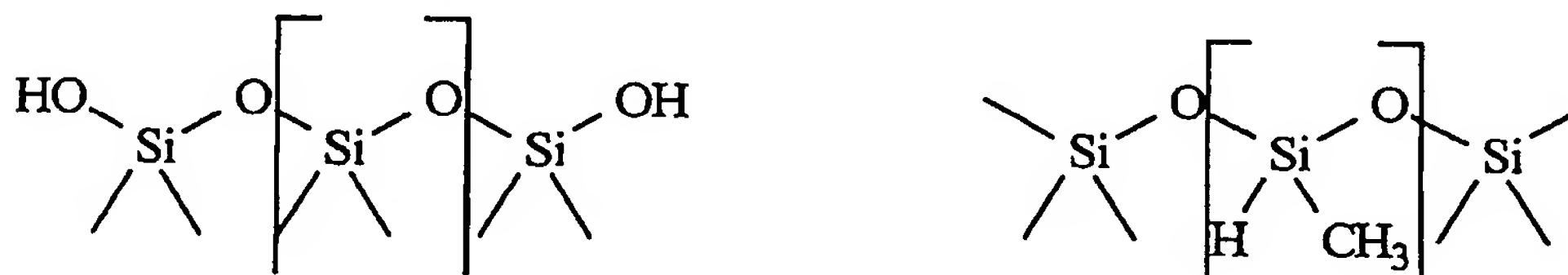
[0009] Außerdem sollen kosmetische Zubereitungen neben ihrer dekorierenden Wirkung auch noch weitere

Anforderungen erfüllen, die oft mit Begriffen wie „kosmetische Eleganz“ oder „angenehmes Hautgefühl“ umschrieben werden. Damit ist im Grunde nichts anderes gemeint, als dass die Anwenderin oder der Anwender des Produktes durch die Anwendung keine zusätzlichen Beschwerden seines Seins erfährt, sondern die Anwendung und damit das Produkt als rundum positiv und angenehm erlebt. All dies kann nur durch weitere Inhaltsstoffe erreicht werden. Solche können beispielsweise Silikonöle und Silikonelastomere sein, die allerdings wiederum erhöhte Anforderungen an die Künste des Herstellers derartiger Zubereitungen stellen.

[0010] Der Einsatz von festen elastomeren Polyorganosiloxanen oder Organopolysiloxanen, im folgenden als Siloxanelastomere bezeichnet, in kosmetischen Zubereitungen ist an sich bekannt und hat in den letzten Jahren an Bedeutung gewonnen. Diese Stoffe fanden neben dem Einsatz in Kosmetika Verwendung in Lebens- und Futtermittel, Arzneimitteln, Imprägniermitteln, Schmiermitteln und so fort. Siloxalelastomere sind teilweise oder vollständig vernetzt und weisen zumeist eine dreidimensionale Struktur auf. Sie sind erhältlich durch eine Reaktion von vinyl-endständigem Polymethylsiloxan und Methylhydrodimethylsiloxan



oder auch durch Reaktion von Hydroxy-endständigem Dimethylpolysiloxan und Trimethylsiloxy-endständigem Methylpolysiloxan:



oder durch Reaktion eines  $\alpha,\omega$ -Dienes mit der Formel  $\text{CH}_2=\text{CH}(\text{CH}_2)_x\text{CH}=\text{CH}_2$ , mit  $x = 1 - 20$  und Methylhydrodimethylsiloxan („New Developments in Silicone Elastomers for Skin Care“, Michael Starch, Dow Corning, 2002).

[0011] Diese Siloxanelastomere werden beispielsweise zur Einstellung der rheologischen Eigenschaften einer Zubereitung eingesetzt. Beschrieben werden derartige Siloxanelastomere beispielsweise in der europäischen Patentschrift 295886 sowie der US-Patentschrift 5,654,362. In diesen Schriften ist auch die Natur der Siloxanelastomere näher beschrieben. Der Einsatz der Siloxanelastomere erfolgt in kosmetischen Zubereitungen insbesondere aufgrund ihrer angenehmen sensorischen Eigenschaften, die resultierenden Produkte werden als samtig, pudrig und/oder mattierend beschrieben. Daneben weisen sie stabilisierende Effekte auf hoch ölhaltige Formulierungen mit geringen Wassergehalten von höchstens 5 Gew.% auf. Bei der Formulierung der oben genannten Produkte stellt sich oftmals das Problem, daß die Siloxanelastomere mit anderen häufig eingesetzten Komponenten unverträglich sind, was zu unbefriedigender Langzeitstabilität der Produkte führt.

[0012] Die Schrift US 5738841 beschreibt zwar wasserfreie Pflege- oder Make-up-Produkte mit bestimmten Silikonkomponenten, aber nicht als wachsfreie Systeme und ohne den Einsatz der typischen kosmetischen Estter.

[0013] Die Schrift WO 9943297 beschreibt zwar Gele aus flüchtigen Kohlenwasserstoffen und Siloxanelastomeren, nicht aber in Form von Zubereitungen, die Interferenzpigmente enthalten.

[0014] Die Schrift EP 790055 beschreibt zwar die Verwendung teilweise vernetzter elastomerer, fester Organopolysiloxane in Kombination mit einer Fettphase und flüchtigen Silikonölen zur Herstellung kosmetischer und/oder dermatologischer Zubereitungen um transfergehinderte Zubereitungen zu erhalten, nicht aber in Form von Zubereitungen, die Interferenzpigmente enthalten.

#### Aufgabenstellung

[0015] Ausgehend hiervon stellte sich die Aufgabe, Interferenzpigmente stabil in dekorative Zubereitungen einzuarbeiten und dabei den Zubereitungen die Vorteile einer angenehmen Sensorik, einem optimalen optischen Effekt der Pigmente und einer guten Deckkraft zu verleihen. Überraschend gelöst wird die Aufgabe durch eine kosmetische und/oder dermatologische Zubereitung enthaltend teilweise vernetzte elastomere feste Organopolysiloxane, Pigmente und flüchtige Lipide dadurch gekennzeichnet, daß die Pigmente Interferenzpigmente sind.

[0016] Es war für den Fachmann insbesondere nicht vorhersehbar, dass hohe Konzentrationen der Interfe-

renzpigmente eingearbeitet und stabilisiert werden können.

[0017] Insbesondere wurde durch die erfolgreiche Herstellung solcher Zubereitungen das Problem gelöst, das insbesondere hochviskose (Viskosität > 9000 mPas) Gele jetzt homogen herstellbar sind und dabei gute Verteilbarkeit und Deckkraft z.B. auf dem Augenlid aufweisen. Dies war bisher nicht erreichbar, da durch den dafür erforderlichen Homogenisierungsvorgang das enthaltene Pigment stark zerstört wurde. Dies hat eine Ursache darin, daß das erfindungsgemäß verwendete Silikonelastomer so beschaffen ist, daß es die Oberfläche der Pigmentpartikel benetzt und das Pigment so gut in die Ölphase auch ohne das sonst erforderliche Anwenden hoher Scherraten einarbeitbar macht. Insbesondere von großem Vorteil ist es, daß zu solchen Gelen weiteres Öl (Gehalt von 0,5% bis 50%) zugegeben werden kann, ohne daß wie früher mit der dadurch sinkenden Viskosität der Zubereitung auch die Sedimentationsneigung ansteigt. Durch den hohen Gehalt an Interferenzpigmenten kann die Zubereitung stark deckend eingestellt werden, ohne daß zusätzlich Titandioxid eingesetzt werden müsste, welches früher zum Erreichen ausreichender Deckkraft erforderlich gewesen war und den Interferenz Effekt stark mindert.

[0018] Auf den sonst üblichen Einsatz von Wachsen, im Sinne von Estern einer langkettigen, aliphatischen Carbonsäure mit einem einwertigen, langkettigen Alkohol, kann verzichtet werden, wodurch die Zubereitungen bessere Fließeigenschaften aufweisen, insbesondere besonders gut aus Tuben entnehmbar sind. Zubereitungen des Standes der Technik weisen dagegen oft den Nachteil auf, nur widerspenstig bereit zu sein, ihre Tube zu verlassen.

[0019] Vorteile gegenüber Stand der Technik sind die gute Sensorik und leichte Verteilbarkeit der Formulierungen, die insbesondere bei der Applikation z.B. auf dem Augenlid von Vorteil sind, das gute Deckvermögen verbunden mit einem starken optischen Effekt (Perlmutter und/oder Farb-Flop), das die Verwendung als Eyeshadow, Blush oder auch Lippenstift begünstigt. Insbesondere lassen sich solche Effekte auf dem Augenlid gut darstellen, da durch die Krümmung des Lides bedingte winkelabhängige Eindrücke quasi „von selbst“ entstehen. Weiterhin sind die so erhaltenen Formeln stabil und lassen sich trotz hoher Pigmentkonzentration gut aus den verschiedenen Packmitteln, z.B. einer Tube entnehmen.

[0020] Das Weglassen eines einzelnen Bestandteile beeinträchtigt die einzigartigen Eigenschaften der Gesamtzusammensetzung. Daher sind alle angegebenen Bestandteile der erfindungsgemäßen Zubereitungen zwangsläufig erforderlich, um die Erfindung auszuführen.

[0021] Erfindungsgemäß vorteilhaft sind erfindungsgemäße kosmetische und/oder dermatologische Zubereitungen die dadurch gekennzeichnet sind, daß die Interferenzpigmente einen Träger aus Aluminium, Fe<sub>2</sub>O<sub>3</sub>, Siliziumdioxid, Glimmer, Al<sub>2</sub>O<sub>3</sub> und/oder Natrium-Calcium-Borosilikat, sowie mindestens eine Beschichtung aus einer der Oxidationsstufen des Eisens, Titandioxid (rutile, anatase), Karmin, Berliner Blau, Siliziumdioxid, Zinndioxid, Silber, besonders bevorzugt Eisen(III)-oxid, Eisen(II, III)-oxid, Titandioxid, Siliziumdioxid, Zinndioxid und Silber aufweisen, so dass die Stärke der jeweiligen Beschichtung im Bereich 10–300 nm, besonders bevorzugt 20 bis 200 nm liegt und sowohl einfach, als auch mehrfach sein kann.

[0022] Dabei ist es erfindungsgemäß von Vorteil, wenn in der erfindungsgemäßen kosmetischen und/oder dermatologischen Zubereitung der Massenanteil der Interferenzpigmente an der fertigen Zubereitung 10 bis 40%, besonders bevorzugt 12 bis 36%, ganz besonders bevorzugt 15 bis 30%, jeweils bezogen auf das Gesamtgewicht der Zubereitung beträgt.

[0023] Erfindungsgemäß vorteilhafte Ausführungsformen der erfindungsgemäßen kosmetischen und/oder dermatologischen Zubereitung sind dadurch gekennzeichnet, daß die flüchtigen Lipide gewählt werden aus der Gruppe der Silikonöle oder Paraffine, wobei Cyclohexane, Cyclopentane und Mischungen davon, sowie Isododecane erfindungsgemäß bevorzugt sind.

[0024] Es ist vorteilhaft im Sinne der vorliegenden Erfindung, wenn die erfindungsgemäße Zubereitung einen Massenanteil von 10 bis 40%, bezogen auf das Gesamtgewicht der Zubereitung, an flüchtigen Lipiden aufweist.

[0025] Erfindungsgemäß vorteilhafte Ausführungsformen der vorliegenden Erfindung sind dadurch gekennzeichnet, daß die Zubereitung einem Massenanteil von 30 bis 50%, bezogen auf das Gesamtgewicht der Zubereitung, an teilweise vernetzten elastomeren festen Organopolysiloxanen aufweist.

[0026] Vorzugsweise werden Siloxanelastomere gewählt aus den Gruppen der Siloxanelastomere, (a) die Einheiten R<sub>2</sub>SiO und RSiO<sub>1,5</sub> und/oder R<sub>3</sub>SiO<sub>0,5</sub> und/oder SiO<sub>2</sub> enthalten, wobei die einzelnen Reste R jeweils unabhängig voneinander Wasserstoff, Alkyl wie beispielsweise Methy, Ethyl, Propyl oder Aryl wie beispielsweise Phenyl oder Toluyl, Alkenyl wie beispielsweise Vinyl bedeuten und das Gewichtsverhältnis der Einheiten R<sub>2</sub>SiO zu RSiO<sub>1,5</sub> im Bereich von 1:1 bis 30:1 gewählt wird; (b) die in Silikonöl unlöslich und quellfähig sind, die durch die Additionsreaktion eines Organopolysiloxans (1), das siliciumgebundenen Wasserstoff enthält mit einem vinylendständigem, aliphatischem Kohlenwasserstoff (2), erhältlich sind, wobei die verwendeten Mengenanteile so gewählt werden, daß die Menge des Wasserstoffes des Organopolysiloxans (1) oder der ungesättigten aliphatischen Gruppen des alph, omega-Diens (2) im Bereich von 1 bis 20 mol-% liegt, wenn das Organopolysiloxan nicht cyclisch ist und im Bereich von 1 bis 50 mol-% liegt, wenn das Organopolysiloxan cyclisch ist, verwendet werden. Besonders bevorzugt ist es, wenn das Organopolysiloxan in Kombination mit

Ölen aus Kohlenwasserstoffen tierischer und/oder pflanzlicher Herkunft, synthetischen Ölen, synthetischen Estern, synthetischen Ethern oder deren Gemischen verwendet wird. Ganz besonders bevorzugt ist es, wenn das Organopolysiloxanelastomer in Kombination mit unverzweigten bei Raumtemperatur flüssigen oder pastösen Silikonölen oder cyclischen Silikonölen oder deren Gemischen verwendet wird. Ganz außergewöhnlich bevorzugt ist es, wenn das Organopolysiloxanelastomer in Form eines Gels aus Organopolysiloxanelastomer und einer Lipidphase verwendet wird, wobei der Gehalt des Organopolysiloxanelastomers in dem Gel 3 bis 80 Gew.%, ganz außergewöhnlich stark bevorzugt 0,3 bis 60 Gew.% beträgt.

[0027] Beispiele hierfür sind:

- DC 9040 Silikon Elastomer Blend (INCI: Cyclopentasiloxane (and) Dimethicone Crosspolymer (and) Cyclohexasiloxane), DC 9041 Silikon Elastomer Blend (INCI: Dimethicone (and) Dimethicone Crosspolymer), DC 9011 Silikone Elastomer Blend (INCI: Cyclopentasiloxane (and) PEG-12 Dimethicone Crosspolymer), Dow Corning (R)DC1-9852 Powder (INCI: Cycoomethicone (and) Dimethicone/Vinyl Dimethicone Crosspolymer; proposed INCI) der Firma Dow Corning
- Gransil GCM-5 (INCI: Cyclopentasiloxane (D5) and Polysilikone-11), Gransil PM-Gel (INCI: Phenyl Trimethicone and Polysilikone-11), Gransil DMG-6 (INCI: Polysilikone-11 (and) Dimethicone) der Firma Grant Industries, Inc.
- Gel Base BSM-PT (INCI: Cycloheximethicone & Dimethicone & Petrolatum), Gel Base BSM 5 (INCI: Cycloheximethicone & Dimethicone & Phenyl Trimethicone), Gel Base BSM PE (INCI: Cycloheximethicone & Dimethicone & Phenyl Trimethicone & Polyethylene) der Firma Arch Personal Care Products
- KSG 15 (INCI: Cyclopentsiloxane & Dimethicone/Vinyl Dimethicone Crosspolymer), KSG 16 (INCI: Dimethicone & Dimethicone/Vinyl Dimethicone Crosspolymer) und KSG 18 (INCI: Phenyltrimethicone & Dimethicone/Phenyl Vinyl Dimethicone Crosspolymer) der Firma Shin Etsu.

[0028] Eine andere Herstellungsmethode, die Suspensionsmethode liefert bei gleichen Edukten in einer Emulsion mit geringem Tensidgehalt stabilisiert sowohl feine Siloxanelastomerkügelchen in Wasser/Tensid Lösung, oder auch nach Sprühtröcknung das reine Siloxanelastomer in Pulverform. Als im Sinne der Erfindung vorteilhaft, jedoch nicht limitierend seien hier genannt:

- Dow Corning 9509 Silicone Elastomer Suspension (INCI: Dimethicone/ Vinyl Dimethicone Crosspolymer + C12 – 14 Pareth-12) der Firma Dow Corning
- Dow Corning 9506 Powder (INCI: Dimethicone/ Vinyl Dimethicone Crosspolymer) der Firma Dow Corning.

[0029] Als Öle können alle unpolaren flüchtigen oder nicht flüchtigen Silikon- oder Kohlenwasserstofföle (Paraffine), einzeln oder in Mischungen, verwendet werden. Beispiele sind:

- Cyclomethicone, insbesondere Cyclotetrasiloxan (D4), Cyclopentasiloxan (D5) und Cyclohexasiloxan (D6), sowie deren Mischungen
- Dimethicone der allgemeinen Formel  $MD_nM$  mit  $n = 3 - 300$
- Phenyltrimethicone, Bis-Phenylpropyl Dimethicone
- Flüchtige Kohlenwasserstoffe wie z.B. Isododecane

[0030] Vorteilhafte Filmbildner sind sowohl Dimeticonole und Abmischungen mit ihnen als auch Silikonpolymere mit Filmbildenden Eigenschaften. Beispiele sind:

- Dimiethiconole wie
- DC 1501 (INCI: Cyclopentasiloxane and Dimethiconol), DC 3225C Formulation Aid (INCI: Cyclomethicone and Dimethicone Copolyol), DC Q2-1403 Fluid (INCI: Dimethicone and Dimethiconol), DC 1401 (INCI: Cyclomethicone and Dimethconol) der Firma Dow Corning
- Trimethylsiloxysilikate, sowohl rein, als auch bereits vorgequollen. Beispiele sind.
- Dow Corning 593 Fluid (INCI: Dimethicone (and) Trimethylsiloxysilicate) von Dow Corning
- Wacker Belsil TMS 803 (INCI: Trimethylsiloxysilicate) von Wacker
- Silikoncopolymere, wie z.B.:
- 2501 Cosmetic Wax (INCI: Dimethicone Copolyol), Mirasil Wax-S (INCI: Dimethiconol Stearate), Mirasil Wax-B (INCI: Dimethiconol Behenate), der Firma Rhodia
- Kohlenwasserstoffpolymere, wie z.B.:
- Permalene 400 (INCI: Polyethylene), New Phase Technologies
- Filmbildende Siliconether und Mischungen davon, wie z.B.:
- 580 Wax (INCI: Stearoxy Trimethylsilane and Stearyl Alkohol) der Firma Dow Corning

[0031] Vorteilhafte Ausführungsformen der Erfindung enthalten Füllstoffe von 0–20%, bevorzugt von 0–10%, jeweils bezogen auf das Gesamtgewicht der Zubereitung.

[0032] Füllstoffe im Sinne der vorliegenden Erfindung sind partikuläre Substanzen, die in der Regel keinen Farbeffekt in der kosmetischen Formulierung erzeugen, in der sie eingesetzt werden. Ferner haben erfindungs-

gemäße Füllstoffe üblicherweise einen niedrigen Brechungsindex und daraus resultierend keine oder eine nur sehr geringe Deckkraft.

[0033] Der Stand der Technik kennt eine Reihe von Füllstoffen, welche z. B. als Trägermaterialien bei der Formulierung von Pudern oder als Viskositäts- und Sensorik-Modulatoren in Emulsionen oder wasserfreien Formulierungen dienen. Derartige Füllstoffe werden häufig auch eingesetzt, um mattierende Effekte auf der Haut zu erlangen oder um Sebum zu absorbieren.

[0034] Darüber hinaus beeinflusst der Einsatz von Füllstoffen im allgemeinen auch die Verteilbarkeit üblicher Formulierungen auf der Haut sowie die Gleichmäßigkeit eines möglichen Farbeffektes.

[0035] Die Füllstoffe im Sinne der vorliegenden Erfindung werden vorteilhaft aus der Gruppe der anorganischen Füllstoffe gewählt, beispielsweise aus der Gruppe der Silikate.

[0036] Silikate sind Salze und Ester (Kieselsäureester) der Orthokieselsäure  $[\text{Si}(\text{OH})_4]$  und deren Kondensationsprodukte. Die Silikate sind nicht nur die artenreichste Klasse der Mineralien, sondern auch geologisch und technisch außerordentlich wichtig. Über 80% der Erdkruste bestehen aus Silikaten.

[0037] Vorteilhaft im Sinne der vorliegenden Erfindung sind beispielsweise Schichtsilikate. Schichtsilikate (Phyllosilikate, Blattsilikate) sind (idealerweise) Silikat-Strukturen mit zweidimensional unendlichen Schichten aus  $[\text{SiO}_4]^{4-}$ -Tetraedern, wobei jedes Tetraeder über 3 Brücken-Sauerstoffe mit Nachbar-Tetraedern verbunden ist.

[0038] Chemische Formeln lassen sich für Schichtsilikate nur angenähert aufstellen, da sie ein großes Ionenaustausch-Vermögen besitzen und Silizium gegen Aluminium und dieses wiederum gegen Magnesium,  $\text{Fe}^{2+}$ ,  $\text{Fe}^{3+}$ , Zn und dergleichen ausgetauscht werden kann. Die daraus möglicherweise resultierende negative Ladung der Schichten wird in der Regel durch Kationen, insbesondere durch  $\text{Na}^+$  und  $\text{Ca}^{2+}$  in Zwischen-schicht-Positionen ausgeglichen.

[0039] Schichtsilikate können durch reversible Einlagerung von Wasser (in der 2- bis 7-fachen Menge) und anderen Substanzen wie z. B. Alkoholen, Glykolen und dergleichen mehr aufquellen. Ihre Verwendung als Verdickungsmittel in kosmetischen Mitteln ist dementsprechend an sich bekannt. Allerdings konnte der Stand der Technik nicht den Weg zur vorliegenden Erfindung weisen.

[0040] Vorteilhafte Schichtsilikate, welche im Sinne der vorliegenden Erfindung eingesetzt werden können, sind beispielsweise solche, deren größte Ausdehnungsrichtung im unmodifizierten und ungequollenen Zustand im Mittel eine Länge von weniger als 10 µm hat. Beispielsweise können die mittleren Ausdehnungen der verwendeten modifizierten Schichtsilikatpartikel bei  $1000 \text{ nm} \times 100 \text{ nm} \times 1 \text{ nm}$  und darunter liegen. Die effektive Größe der modifizierten Schichtsilikatpartikel in einer kosmetischen oder dermatologischen Formulierung hängt selbstverständlich von der Menge an eingelagerten Substanzen ab.

[0041] Erfindungsgemäß vorteilhafte (Schicht-) Silikate sind insbesondere:

- Talkum:  $\text{Mg}_3[\text{Si}_4\text{O}_{10}](\text{OH})_2$ ,
- Kaolin:  $\text{Al}_2[\text{Si}_2\text{O}_5](\text{OH})_4$
- Montmorillonit:  $\text{M}^+\text{Al}[\text{Si}_2\text{O}_5](\text{OH})$ , auch Smektite genannt. Darunter fallen:
- Bentonite = Montmorillonite mit Ca (Fuller Erden) oder Na (Wyoming Bentonite)
- Hektorite:  $\text{M}^+_{0,3}(\text{Mg}_{2,7}\text{Li}_{0,3})[\text{Si}_4\text{O}_{10}](\text{OH})_2$ , worin  $\text{M}^+$  meist  $\text{Na}^+$  darstellt,
- Glimmer (Mica), ein Alumosilikat, das leicht spaltbar ist und in tafeligen Kristallen vorliegt. Glimmer ist transparent bis durchscheinend und weist Perlglanz auf. Die wichtigste Form ist Muskovit:  $\text{K Al}_2(\text{AlSi}_3\text{O}_{10})(\text{OH}, \text{F})_2$ . Sericite ist eine Sonderform des Glimmers, die kleinere Plättchen als Muskovit aufweist.

[0042] Auch Siliziumoxide ( $\text{SiO}_2$ ) sind vorteilhaft im Sinne der vorliegenden Erfindung zu verwenden. Erfindungsgemäß bevorzugt sind beispielsweise Aerosile (fumed Silica), welche hochdisperse Kieselsäuren mit häufig irregulärer Form sind, deren spezifische Oberfläche in der Regel sehr groß ist ( $200\text{--}400 \text{ m}^2/\text{g}$ ) und mit Hilfe des Herstellverfahrens gesteuert werden kann. Aerosile werden auch bezeichnet als: Amorphous Silica, Amorphous, Silicon Oxide Hydrate Silica, Amorphous Silicic Anhydride, Silicon Dioxide.

[0043] Erfindungsgemäß vorteilhafte Aerosile sind z. B. unter den folgenden Handelsnamen erhältlich: Aerosil 130 (Degussa Hüls), Aerosil 200 (Degussa Hüls), Aerosil 255 (Degussa Hüls), Aerosil 300 (Degussa Hüls), Aerosil 380 (Degussa Hüls), B-6C (Suzuki Yushi), CAB-O-SIL Fumed Silica (Cabot), CAB-O-SIL EH-5 (Cabot), CAB-O-SIL HS-5 (Cabot), CAB-O-SIL LM-130 (Cabot), CAB-O-SIL MS-55 (Cabot), CAB-O-SIL M-5 (Cabot), E-6C (Suzuki Yushi), Fossil Flour MBK (MBK), MSS-500 (Kobo), Neosil CT 11 (Crosfield Co.), RonaspHERE (Rona/EM Industries), Silica, Anhydrous 31 (Whittaker, Clark & Daniels), Silica, Crystalline 216 (Whittaker, Clark & Daniels), Silotrat-1 (Vevy), Sorbosil AC33 (Crosfield Co.), Sorbosil AC 35 (Crosfield Co.), Sorbosil AC 37 (Crosfield Co.), Sorbosil AC 39 (Crosfield Co.), Sorbosil AC77 (Crosfield Co.), Sorbosil TC 15 (Crosfield Co.), Spherica (Ikeda), Spheriglass (Potters-Ballotini), Spheron L-1500 (Presperse), Spheron N-2000 (Presperse), Spheron P-1500 (Presperse), Wacker HDK H 30 (Wacker-Chemie), Wacker HDK N 20 (Wacker-Chemie), Wacker HDK P 100 H (Wacker Silicones), Wacker HDK N 20P (Wacker-Chemie), Wacker HDK N 25P (Wacker-Chemie), Wacker HDK S 13 (Wacker-Chemie), Wacker HDK T 30 (Wacker-Chemie), Wacker HDK V

15 (Wacker-Chemie), Wacker HDK V 15 P (Wacker-Chemie), Zelec Sil (DuPont).

[0044] Siliziumoxide lassen sich auch in sphärischer Form herstellen, wobei hier die spezifische Oberfläche kleiner ist als bei den Aerosilen, da die Teilchen größer und rund sind. Ein Beispiel hierfür sind die Ronaspheren (mittlerer Teilchendurchmesser < 3 µm) der Fa. Merck.

[0045] Weitere erfindungsgemäß bevorzugte Füllstoffe sind Siliziumdioxide, deren freien OH-Gruppen an der Teilchenoberfläche (ganz oder teilweise) organisch modifiziert sind.

[0046] Vorteilhaft sind z. B. die durch Addition von Dimethylsilyl-Gruppen erhältlichen Silica Dimethyl Silylate, wie beispielsweise Aerosil R972 (Degussa Hüls), Aerosil R974 (Degussa Hüls), CAB-O-SIL TS-610 (Cabot), CAB-O-SIL TS-720 (Cabot), Wacker HDK H15 (Wacker-Chemie), Wacker HDK H18 (Wacker-Chemie) und/oder Wacker HDK H20 (Wacker-Chemie).

[0047] Ferner vorteilhaft sind die durch Addition von Trimethylsilyl-Gruppen erhältlichen Silica Silylate (z. B. Aerosil R 812 (Degussa Hüls), CAB-O-SIL TS-530 (Cabot), Sipernat D 17 (Degussa Hüls), Wacker HDK H2000 (Wacker-Chemie)).

[0048] Ferner vorteilhaft im Sinne der vorliegenden Erfindung sind die durch Hydrolyse- und Kondensationsreaktionen von Methyltrimethoxysilane erhältlichen Polymethylsilsesquioxane, die ebenfalls eine runde Form besitzen und deren Teilchengrößeverteilung durch die Herstellung gesteuert werden kann.

[0049] Bevorzugte Polymethylsilsesquioxane werden beispielsweise unter den Handelsnamen Tospearl 2000 B von GE Bayer Silikones, Tospearl 145A von Toshiba, AEC Silicone Resin Spheres von A & E Connock sowie Wacker – Belsil PMS MK von der Wacker-Chemie angeboten.

[0050] Weiterer vorteilhafter Füllstoff im Sinne der vorliegenden Erfindung ist Bornitrid (siehe Fig. 2). Bornitrid ist isoelektronisch mit Kohlenstoff (d. h. es sind Graphit- und Diamantform möglich). Bornitrid zeichnet sich durch seine chemische Inertheit aus.

[0051] Vorteilhaft im Sinne der vorliegenden Erfindung sind beispielsweise die im folgenden aufgelisteten Bornitride:

Handelsname	erhältlich bei:
Boron Nitride Powder	Advanced Ceramics
Boron Nitride Powder	Sintec Keramik
Ceram Blanche	Kawasaki
HCST Boron Nitride	Stark
Très BN®	Carborundum
Wacker-Bornitrid BNP	Wacker-Chemie

[0052] Weitere vorteilhafte Füllstoffe im Sinne der vorliegenden Erfindung sind Carbonate, wie z. B. Magnesiumcarbonat ( $MgCO_3$ ) und Calciumcarbonat ( $CaCO_3$ ). Es ist insbesondere vorteilhaft im Sinne der vorliegenden Erfindung, die Carbonate als Füllstoffe in trockenen Pudern zu verwenden.

[0053] Die Füllstoffe im Sinne der vorliegenden Erfindung werden darüber hinaus vorteilhaft aus der Gruppe der organischen Füllstoffe gewählt.

[0054] Erfindungsgemäß vorteilhafte organische Füllstoffe sind z. B. natürliche Polymere, wie Seidenpuder, mikrokristalline Cellulose und/oder Zinkstearate.

[0055] Vorteilhafte organische Füllstoffe sind ferner Stärke und Stärkederivate, wie:

- Maisstärke Zea Mays (Amidon De Mais MST (Wackherr), Argo Brand Corn Starch (Corn Products), Pure-Dent (Grain Processing), Purity 21C (National Starch)),
- Reisstärke (D.S.A. 7 (Agrana Stärke), Oryzapearl (Ichimaru Pharcos)),
- Distarch Phosphate (Corn PO4 (Agrana Stärke), Corn PO4 (Tri-K)),
- Sodium Corn Starch Octenylsuccinate (C\*mcap – Instant 12639 (Cerestar USA)),
- Aluminium Starch Octenylsuccinate (Covafluid AMD (Wackherr), Dry Flo-PC (National Starch), Dry Flo Pure (National Starch), Fluidamid DF 12 (Roquette)),

[0056] Erfindungsgemäß bevorzugte organische Füllstoffe sind auch synthetische Polymere, d. h. Polymerpartikel, welche in der Zubereitung in Form von Feststoffen vorliegen, wie beispielsweise Polycarbonate, Polyether, Polyethylen, Polypropylen, Polyvinylchlorid, Polystyrol, Polyamide, Polyurethane, Polyacrylate und der gleichen mehr. Besonders vorteilhaft ist z. B. die Substanz mit der INCI-Bezeichnung HDI/Trimethylol Hexyl-lactone Crosspolymer, welche unter der Bezeichnung BPD-500/Plastic Powder D von der Firma Kobo erhältlich ist.

[0057] Ferner vorteilhaft im Sinne der vorliegenden Erfindung ist Nylon (Polyamid 6 und Polyamid 12), wie beispielsweise mikrofeine Polyamid-Partikel, insbesondere die unter der Handelsbezeichnung SP-500 bei der Firma TORAY erhältlichen. Ferner vorteilhaft sind Polyamid 6- (auch: Nylon 6), bzw. Polyamid 12- (auch: Nylon 12), Partikel. Polyamid 6 ist das aus ε-Aminocapronsäure (6-Aminohexansäure), oder ε-Caprolactam aufgebaute Polyamid (Poly(ε-caprolactam)], und Polyamid 12 ist ein Poly(ε-laurinlactam), aus ε-Laurinlactam. Vor-

teilhaft im Sinne der vorliegenden Erfindung sind beispielsweise Orgasol® 1002 (Polyamid 6), Orgasol® 2002 (Polyamid 12) und Orgasol® 4000 (Polyamide 6/12), von der Firma Atofina.

[0058] Weitere vorteilhafte organische Füllstoffe sind:

- PMMA: Polymethylmethacrylate
- Polyethylene Spheres
- Polyurethane

[0059] Effektpigment können nicht nur in Schichtdicke, Anzahl der Schichten, sowie ihrem Material variieren, sondern auch das plättchenförmigen Substrat, der Kern des Pigments, kann aus unterschiedlichen Materialien ausgewählt sein, so kann der Kern aus dabei prinzipiell aus allen plättchenförmigen Materialien bestehen, die senkrecht auftreffendes Licht ganz oder teilweise (üblicherweise zu mindestens 10%) reflektieren. In der Regel sind diese Materialien hochbrechend und haben üblicherweise einen Brechungsindex  $\geq 2$ , vorzugsweise  $\geq 2,4$ , sie können opak, semiopak oder transparent und in der Reflexion bzw. Transmission auch farbig sein. Dies trifft in der Regel auf Metalle und Legierungen, z.B. Stahl, Kupfer und seine Legierungen wie Messing und Bronzen und insbesondere Aluminium und seine Legierungen wie Aluminiumbronze zu. Eine weitere Gruppe geeigneter Substratteilchen sind nicht-metallische Plättchen, die entweder selbst hochbrechend sind, oder niedrigbrechend und deshalb mit einer hochbrechenden Beschichtung versehen sind. Beispiele für besonders hochbrechende Materialien (selektiv oder nicht-selektiv absorbierende) sind z.B. plättchenförmige Metalloxide, -sulfide und -nitride wie vor allem plättchenförmiges, semiopakes  $\alpha$ -Eisen(III)oxid (Hämatit), das mit Silicium, Aluminium oder Aluminium und Mangan dotiert sein kann, plättchenförmiges, opakes Eisen(II/III)oxid (Magnetit), Boronitrid und Graphitplättchen. Ebenfalls geeignet sind nichtabsorbierende (farblose), transparente Materialien, wie plättchenförmiges Bismutoxychlorid, Titandioxid und Zirkondioxidplättchen.

[0060] Beispiele für geeignete von sich aus nur niedrigbrechende Materialien sind vor allem silikatische Plättchen wie insbesondere hell bzw. weiße Glimmer, vorzugsweise nass vermahlerer Muskovit, aber auch andere natürliche Glimmer, z.B. Phlogopit und Biotit, künstlicher Glimmer, Talk- und Glasschuppen, Magnesiumfluorid und Siliciumdioxidplättchen.

[0061] Bevorzugt wird das Substrat aus Siliciumdioxid, Aluminium, Eisenoxid oder Glimmer (Mica) ausgewählt.

[0062] Als hochbrechende Beschichtung für die niedrigbrechenden Materialien eignen sich hochbrechende Metalloxide, Metallnitride und Metallsulfide wie Titan-, Zirkon-, Zink- und Zinnoxid, Bismuthoxichlorid, Eisenoxide, Cromoxid und Ilmenit, sowie reduzierte Titanate mit Oxidationszahlen von  $< 4$  bis 2 enthaltene Titanverbindungen und seine Reduktionsprodukte sowie Eisen(III)oxid und ihre Schichtdicken liegen in der Regel zwischen 10–300 nm. (Irodin® von Merck, Paliochrom von BASF und Mearlin® von Mearl)

[0063] Weiter eignen sich als Beschichtungsmaterialien alle niedrigbrechenden, farblosen Substanzen, die filmartig und dauerhaft auf die Substratteilchen aufgebracht werden können, wobei hier entweder die hochbrechenden Substratteilchen verwendet werden können oder auch die aus niedrigbrechende Materialien bestehenden und bereits mit hochbrechenden Schichten umhüllten.

[0064] Geeignet sind Metalloxide und Metalloidhydrate wie Siliciumdioxid, Siliciumdioxidhydrat, Aluminium-oxid, Aluminiumoxidhydrat und deren Mischungen. Solche Schichten können eingelagerte, selektiv absorbierende Farbmittel enthalten, wobei prinzipiell Farbstoffe und Pigmente geeignet sind, die dauerhaft in die Schicht eingelagert werden können und deren Brechungsindex vorzugsweise nicht wesentlich über dem Brechungsindex des Schichtmaterials liegt (würde den Gesamtbrechungsindex erhöhen und den goniochromatischen Effekt mindern). Neben niedrigbrechenden, anorganischen Pigmenten wie Cyanoferraten (z.B.:  $\text{Fe}_4[\text{Fe}(\text{CN})_6]_3$ ), Granaten (z.B.  $\text{Ca}_3\text{Cr}_2\text{Si}_3\text{O}_{12}$ ), Phosphaten (insbesondere Cobaltphosphaten, z.B.  $\text{Co}_3(\text{PO}_4)_2$ ), Boraten und Ultramarin ( $\text{Na}_4(\text{Al}_3\text{Si}_3\text{O}_{12})\text{S}_3$ ) eignen sich vor allem organische Pigmente, da ihre Wechselwirkung mit Licht insbesondere auf Absorption beruht. Beispielhaft seien hier folgende Pigmentklassen aufgeführt: Azo-, Diazo-, Antrachinon-, Phthalocyanin-, und Flavanthonpigmente, sowie Salze der natürlichen organischen Farbstoff (z.B.: Al-Ca-Lack der Karminsäure).

[0065] Besonders geeignet sind Farbstoffe, da sie im Gegensatz zu den Pigmenten nicht als Streuzentren wirken. Es können im Prinzip alle Farbstoffe in vorkommen, die für die dekorative Kosmetik zugelassen sind. Beispiele hierfür sind: natürliche organische Farbstoffe wie Karminsäure, Cyaninfarbstoffe, Di- und Triarylmethanfarbstoffe und Phenothiazinfarbstoffe.

[0066] Es sind hierbei sowohl einfache Beschichtungen, als auch Mehrfachbeschichtungen denkbar, wobei die einzelnen Schichten aus den verschiedenen Materialien gewählt sein können.

[0067] Zusätzlich können die Pigmente noch oberflächenmodifiziert sein. Hierunter wird eine mono- oder mehr molekulare Belegung der Pigmentoberfläche verstanden. Es können eine oder mehrere Substanzen entweder chemisch gebunden oder durch Physisorption an der Oberfläche haften. Im Sinne der Erfindung sind hier vor allem unpolare Oberflächenbelegungen von Vorteil wie Methicone (z.B.: Methylhydrogenpolysiloxane), Octylsilane (z.B.: Octyltrimethoxysilane, Trimethoxycaprylsilane), Octyldodecyl Myristate und ihre Mischungen.

Substrat	Beschichtungen						Karmin e	SiO <sub>2</sub>	Beispiele
	TiO <sub>2</sub>	Fe <sub>2</sub> O <sub>3</sub>	Fe <sub>3</sub> O <sub>4</sub>	Ag	Fe <sub>4</sub> [Fe(CN <sub>6</sub> ) <sub>3</sub> ]	Al			
Al	X								Sicopearl Fantastico Pink und Gold, BASF/
Al <sub>2</sub> O <sub>3</sub>	X					X		X	Xirona Silver, Merck
Mica	X								Timiron Splendid blue, violet, green, gold, copper, Merck
Mica	X			X				X	Flamenco AS; (Cadre/ Impag)
Mica	X			X					Duochrome Blue Green, Engelhard
Mica	X		X					X	Colorona brilliant green, Merck
Mica	X	X							Timiron Fine Gold MP-20, Colorona Bright Gold, Colorona Red Gold, Timiron Karate Gold MP-24, Colorona Oriental Beige, Timiron Bronze MP-60, Flamenco Twilight Blue und Green sowie Desert Reflections-Serie von Engelhard
Mica	X	X					X		Colorona Glitter Orange, Merck
Mica	X	X	X						Colorona Platina Gold, Merck
Mica	X	X	X						Colorona Platina Silver, Merck
Mica				X					Colorona Blackstar, Blue, Red, Green, Gold, Merck
Mica	X	X	X						Dichrona BG, Merck
Mica	X	X	X					X	Dichrona RY, Merck
SiO <sub>2</sub>	X						X		Xirona Caribbean Blue, Merck
SiO <sub>2</sub>	X						X		Xirona Magic Mauve, Merck
SiO <sub>2</sub>				X					Xirona Indian Summer, Merck
Fe <sub>2</sub> O <sub>3</sub>				X				X	Sicopearl Fantastico Green

Substrat	Beschichtungen								Karmin e	SiO <sub>2</sub>	Beispiele
	TiO <sub>2</sub>	Fe <sub>2</sub> O	Fe <sub>3</sub> O	Ag	Fe <sub>4</sub> [Fe(CN <sub>6</sub> ) <sub>3</sub> ]	Al	Sn O <sub>2</sub>	Sn(IV) -Oxid			
Fe <sub>3</sub> O <sub>4</sub>									X		Timica Nu Antique Silver 110AB, Engelhard
Fe <sub>2</sub> O <sub>3</sub> + Fe <sub>3</sub> O <sub>4</sub>									X		Timica Nu Antique Gold 212GB, Engelhard
Calcium- Sodium Borosilica te											Cosmetallic Scintillating Silver, Engelhard

[0068] Es ist erfindungsgemäß von Vorteil, wenn in der erfindungsgemäßen Zubereitung zusätzlich lipophile Filmbildner, besonders bevorzugt Dimethicone Copolyol und/oder Dimethiconol enthalten sind.

[0069] Vorteilhafte Ausführungsformen der vorliegenden Erfindung zeichnen sich dabei dadurch aus, daß die Zubereitung einem Massenanteil von 3 bis 12%, bezogen auf das Gesamtgewicht der Zubereitung, an lipophilen Filmbildnern aufweist.

[0070] Insbesondere ist es erfindungsgemäß vorteilhaft, wenn die kosmetische und/oder dermatologische Zubereitung in Form eines Gels vorliegt.

[0071] Es ist bei all diesem im Einzelfalle möglich, dass die vorgenannten Konzentrationsangaben leicht über- oder unterschritten werden und dennoch erfindungsgemäße Zubereitungen erhalten werden. Dies kommt angesichts der breit streuenden Vielfalt an geeigneten Komponenten derartiger Zubereitungen für den Fachmann nicht unerwartet, so dass er weiß, dass bei solchen Über- oder Unterschreitungen der Boden der vorliegenden Erfindung nicht verlassen wird.

#### Ausführungsbeispiel

[0072] Die nachfolgenden Beispiele sollen die vorliegende Erfindung verdeutlichen, ohne sie einzuschränken. Die Zahlenwerte in den Beispielen bedeuten Gewichtsprozente, bezogen auf das Gesamtgewicht der jeweiligen Zubereitungen.

	1	2	3	4	5	6
Dow Corning 9041 Silikon Elastomer Blend; Dow Corning	49,5					
Gransil GMC-5 Gel; Grant Industries, Inc.		Ad 100				
Dow Corning 9040 Silikon Elastomer Blend; Dow Coming			54,5	35		57
KSG 15, Shin Etsu					37	
Cyclomethicone	Ad 100		Ad 100	Ad 100		Ad 100
Phenyltrimethicone			8,5		12,5	
Dimethicone				5		
Isoparaffin					Ad 100	
Trimethylsiloxysilicate, z.B. DC 593 Fluid; Dow Corning	9					
Dimethiconol, z.B. DC 1501; Dow Coming					11	10
Silikonpolymer, z.B. DC 2501 Cosmetic Wax, Dow Corning			8	2		
Silikonether, z.B. Dow Corning 580 Wax; Dow Corning			6			5
Silikonpolymer, z.B. Mirasil Wax-S; Rhodia			2			
Polyethylene				2		
Sicopearl Fantastico (BASF)	23					18
Timica Nu Antique (Mearl)		20				
Colorona (Merck), z.B. Egyptian Emerald			10,5			
Dichrona Splendid (Merck)					18	
Colorona Fine AS (Cadre)				19		
Talkum						6
Nylon 6/12		2,5				
Glimmer				5,5		
Fumed Silica (Aeorsil, Degussa)		0,1				
Konservierung, Parfüm	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.

	7	8	9	10	11	12
Dow Corning 9041 Silikon Elastomer Blend; Dow Corning	50					
Gransil GMC-5 Gel; Grant Industries, Inc.		60				
Dow Corning 9040 Silikon Elastomer Blend; Dow Corning			55	40		50
KSG 15, Shin Etsu					40	
Cyclomethicone	10	Ad 100	Ad 100	25	Ad 100	Ad 100
Phenyltrimethicone	2					2
Dimethicone				Ad 100		
Isoparaffin	Ad 100					2
Trimethylsiloxysilicate, z.B. DC 593 Fluid; Dow Corning			2			
Dimethiconol, z.B. DC 1501; Dow Corning				10		
Silikonpolymer, z.B. DC 2501 Cosmetic Wax, Dow Corning					5	5
Silikonether, z.B. Dow Corning 580 Wax; Dow Corning					5	
Polyethylene			1			
Xirona Serie, Merck	15			10	15	
Desert Reflections Serie, Engelhard		5				
Iridin Serie (Merck)			15			2
Eisenoxid schwarz	2	6				1
Timiron Splendid Serie, Merck		10		6		10
Talkum	15					
Silica, z.B. MSS-500/3H, Kobo					5	
PMMA			2			
Polymethylsilsesquioxane, z.B. Tosperal Serie, GE Bayer Silicones		3		5		
Konservierung, Parfüm	q.s.	q.s.	q.s.	q.s.	q.s.	q.s.

**Patentansprüche**

1. Kosmetische und/oder dermatologische Zubereitung enthaltend teilweise vernetzte elastomere feste Organopolysiloxane, Pigmente und flüchtige Lipide dadurch gekennzeichnet, daß die Pigmente Interferenzpigmente sind.

2. Kosmetische und/oder dermatologische Zubereitung nach Anspruch 1, dadurch gekennzeichnet, daß die Interferenzpigmente einen Träger aus Aluminium,  $\text{Fe}_2\text{O}_3$ , Siliziumdioxid, Glimmer,  $\text{Al}_2\text{O}_3$  und/oder Natrium-Calcium-Borosilikat, sowie mindestens eine Beschichtung aus einer der Oxidationsstufen des Eisen, Titan-dioxid (rutile, anatase), Karmin, Berliner Blau, Siliziumdioxid, Zinn-dioxid, Silber, besonders bevorzugt Eisen(III)-oxid, Eisen(II, III)-oxid, Titandioxid, Siliziumdioxid, Zinn-dioxid und Silber aufweisen, so dass die Stärke der jeweiligen Beschichtung im Bereich 10–300nm, besonders bevorzugt 20 bis 200 nm liegt und sowohl ein-

fach, als auch mehrfach sein kann.

3. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, dass der Massenanteil der Interferenzpigmente an der fertigen Zubereitung 10 bis 40%, besonders bevorzugt 12 bis 36%, ganz besonders bevorzugt 15 bis 30%, jeweils bezogen auf das Gesamtgewicht der Zubereitung beträgt.

4. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, daß die flüchtigen Lipide gewählt werden aus der Gruppe der Silikonöle oder Paraffine, besonders bevorzugt sind Cyclohexane, Cyclopentane und Mischungen davon, sowie Isododecane.

5. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, daß die Zubereitung einen Massenanteil von 10 bis 40%, bezogen auf das Gesamtgewicht der Zubereitung, an flüchtigen Lipiden aufweist.

6. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, daß die Zubereitung einem Massenanteil von 30 bis 50%, bezogen auf das Gesamtgewicht der Zubereitung, an teilweise vernetzten elastomeren festen Organopolysiloxanen aufweist.

7. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, daß zusätzlich lipophile Filmbildner, besonders bevorzugt Dimethicone Copolyol und/oder Dimethiconol enthalten sind.

8. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, daß die Zubereitung einem Massenanteil von 3 bis 12%, bezogen auf das Gesamtgewicht der Zubereitung, an lipophilen Filmbildnern aufweist.

9. Kosmetische und/oder dermatologische Zubereitung nach einem der vorangehenden Ansprüche dadurch gekennzeichnet, daß die Zubereitung in Form eines Gels vorliegt.

Es folgt kein Blatt Zeichnungen